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British Dental Journal, March 19, 1943.

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BRITISH MEDICAL JOURNAL

LONDON SATURDAY MAY 29 1943

TREATMENT OF PERNICIOUS ANAEMIA WITH AN EXPERIMENTAL PROTEOLYSED LIVER PREPARATION

PRELIMINARY OBSERVATIONS

BY

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The treatment of pernicious anaemia by parenteral injections of liver extracts has almost universally replaced the oral administration of whole liver. Among the disadvantages of whole liver are its relatively high cost, the difficulty of ensuring a regular supply, the distaste engendered by its prolonged administration, and the uncertainties attending its assimilation in patients whose digestive and absorptive processes are impaired. Recent reports, however, have indicated the superiority of whole liver in the treatment of certain types of macrocytic anaemia, such as those occurring in pregnancy, sprue, and tropical nutritional deficiency states; occasionally cases of these anaemias have in fact been shown to be refractory to fractionated liver extracts administered parenterally but amenable to whole liver given by mouth. Accordingly it occurred to one of us (D. R.) that it might be an advantage to administer to such patients whole liver in a soluble predigested form.

"Proteolysed Liver"

In the normal physiological process of assimilation of whole liver, absorption presumably begins as soon as any soluble split products are formed as the result of acid peptic digestion and alkaline tryptic digestion. In view of the impossibility of reproducing these processes exactly in the laboratory it was decided to attempt the experimental preparation of predigested whole liver. Papain was chosen as a suitable enzyme for use, since this will react at the natural *p*H of minced liver—namely, approximately *p*H 5.6. In this way the danger of the destruction of active principles by exposure to acid or alkaline conditions would be avoided.

Process of Preparation.—Take 330 lb. of minced liver in a steam-heated pan. Add 36 gallons of water and 660 g. of papain, and heat the mixture to 60° C. Maintain the temperature at this level for three hours. Then raise the temperature to 100° C. and boil vigorously for ten minutes. Strain the hot digestion mixture through cloth, and concentrate the filtrate at a low temperature in a vacuum still to 20 gallons. Clarify the concentrate by filtration, using sterilized kieselguhr as a filter aid, and then sterilize by filtration through suitable asbestos pads. Dry the sterile liquid in a low-temperature vacuum oven.

Properties.—The product thus obtained is a dry, sterile, granular light-brown powder which is not unreasonably hygroscopic. It is completely soluble in hot or cold water, giving a solution that is reasonably palatable, being free from the characteristic liver flavour. It seems probable that as the cell walls are disrupted a high proportion of the water-soluble constituents will be liberated and hence retained in the final product, and that any active principle initially present as a protein complex will be set free and so be rendered available for immediate absorption. In proteolysed liver there is present predigested protein material in addition to essential haemopoietic factors. Fats, fat-soluble vitamins, and coarse indigestible material are alone discarded. It is estimated that one ounce of proteolysed liver powder is derived from approximately six ounces of raw "wet" liver, after allowing for losses due to the mechanical process. A chemical analysis gave the following data:

Loss at 100° C. (moisture) ..	6.2%	Copper	0.003%
Nitrogen	12.7%	Iron	0.04%
Ash	5.8%	*p*H	4.95

Preliminary tests indicate that riboflavin is present in a concentration of 10 mg. per 100 g., as determined by the method of Shaw (1939).

Thanks to Dr. Bullock of Manchester University, it has been possible to spray dry the sterile liquor, and thereby obtain an even more satisfactory product.

Clinical Trials

The suggestion that proteolysed liver may prove of value in the treatment of certain macrocytic anaemias refractory to the usual liver extracts renders it desirable that the efficacy of this preparation should first be determined in the treatment of the much commoner and more readily available cases of classical Addisonian pernicious anaemia. The object of the remainder of this communication is therefore to record the results obtained in the treatment of five such cases.

All the patients were typical examples of pernicious anaemia in relapse as regards both their clinical and their haematological features. Four of them had received no liver therapy before admission to hospital. The other patient (Case 4) had been treated for pernicious anaemia seven years previously, but had received no treatment during recent years. In all cases examination revealed a macrocytic hyperchromic anaemia with marked anisocytosis and poikilocytosis, and sternal puncture showed a cellular megaloblastic marrow. A histamine-fast achlorhydria was also present in all cases.

As soon as the diagnostic investigations had been completed, treatment with proteolysed liver was instituted. No other

haematinic substance was administered during the stay in hospital. The liver preparation is in the form of a granular powder readily soluble in water. For administration it was dissolved in warm but not boiling water, pepper and salt being added to taste, making a beverage which was found by the patients to be quite palatable. The dosage given varied from two to eight teaspoonfuls of the powder daily, equivalent by weight to two drachms and one ounce respectively. The preparation was conveniently given twice daily. Arrangements have been made for the patients to continue taking proteolysed liver in a daily dose of one teaspoonful on their discharge from hospital, and they are being closely observed as out-patients. The present communication is necessarily concerned only with the therapeutic results observed during the period of treatment in hospital.

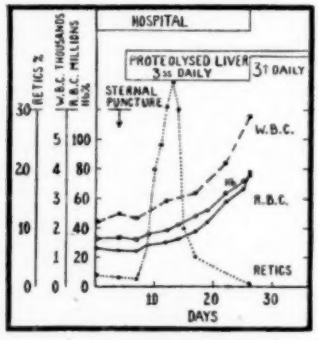
Without exception a satisfactory response was noted within a few days of the institution of treatment. In one case (Case 5) reliable reticulocyte counts were not available, but the progressive improvement in her blood picture left no doubt concerning the effect of treatment. The other four patients all displayed a significant reticulocyte response, which was followed by a progressive amelioration of their clinical and haematological conditions.

The salient features of the cases are displayed for the sake of brevity in the accompanying table, in which are set out the blood counts before treatment and on discharge from hospital, the time and degree of the observed reticulocyte responses, the duration of treatment, and the dosage employed.

Summary of Results of Oral Administration of Proteolysed Liver in 5 Typical Cases of Addisonian Pernicious Anaemia (These data are relevant only to the period of treatment in hospital)

*Blood Counts	Case 1 aged 72	Case 2 aged 50	Case 3 aged 60	Case 4 aged 51	Case 5 aged 44
Hb .. .. .. *a*	23%	32%	35%	44%	50%
" .. .. .. *b*	61%	75%	75%	80%	83%
R.B.C. (millions):					
a	0·88	1·28	1·37	1·71	1·84
b	2·85	3·88	3·70	3·86	3·54
Rise during first 2 weeks of treatment	1·08	0·92	1·01	0·57	1·11
Colour index:					
a	1·30	1·25	1·28	1·30	1·36
b	1·07	0·97	1·01	1·04	1·17
W.B.C.:					
a	—	2,200	2,500	2,200	4,000
b	—	5,800	7,800	4,800	5,400
Reticulocytes:					
Maximum response	35%	35%	17%	22%	—
Time of maximum response	9th day	8th day	7th day	12th day	—
Time of commencement of response	4th day	4th day	4th day	5th day	—
Duration of treatment	34 days	21 days	29 days	20 days	20 days
Dosage daily	℥j	℥ss	℥ij	℥ij	℥ij

* Under this heading "*a*" refers to the count before starting treatment, while "*b*" refers to the final count before discharge from hospital.



Graph showing response to treatment with oral proteolysed liver in a case of pernicious anaemia (Case 2).

The average rise in red cells per c.mm. was 0.94 million during the first two weeks and 1.74 millions during the first three weeks of treatment. As regards dosage, an adequate daily dose appears to be two drachms, but in certain resistant cases it is possible that a larger amount may be desirable. It should be noted that this amount is derived from less than two ounces of raw liver. Since half a pound of raw liver is the usual minimal daily quantity necessary to produce a satisfactory response in pernicious anaemia, it would seem that proteolysed liver is relatively much more effective.

Details of one typical example are given herewith.

Illustrative Case

The patient, a married woman aged 50 (Case 2 of table), gave a history of pallor, increasing breathlessness on exertion, palpitations, nausea, and flatulence of several months' duration. Latterly she had also complained of a sore tongue and tingling of her extremities. Physical examination revealed marked pallor with slight icterus. Nutrition was slightly below standard. The tongue was atrophic. The liver and spleen were slightly enlarged. No enlargement of lymph glands was noted. No evidence of purpura was seen.

Laboratory Examination.—Icteric index, 25; gastric analysis—histamine-fast achlorhydria; Wassermann reaction negative; sternal puncture—cellular megaloblastic marrow with some maturation arrest of the granulocytes. Peripheral blood examination showed a picture typical of pernicious anaemia in the stage of relapse. Further details of blood counts are shown in the accompanying chart.

Treatment.—Proteolysed liver extract was given orally in daily doses of one tablespoonful.

The patient was discharged from hospital 21 days after admission with a great improvement in her physical condition and a gain of 2.6 million red cells per c.mm. She was instructed to continue taking proteolysed liver, one teaspoonful daily.

Discussion

It is not our purpose to advocate the routine use of proteolysed liver in the treatment or maintenance of classical cases of pernicious anaemia. In such cases the existing practice of parenteral injection of reliable liver extracts is economical and effective, and in maintenance treatment has the advantage of assuring that the patient actually receives a known amount of liver extract regularly.

A consideration of obvious importance is that of cost. If it should prove practicable to market proteolysed liver at a price that will enable the cost of treatment with it to compare favourably with existing parenteral therapy, the former preparation would have advantages in the treatment of certain classes of patients—namely, those who may be situated in circumstances rendering regular injections inconvenient, those who object to injections, and those who are allergic to liver extracts injected parenterally.

It is in the field of refractory anaemias, however, that this preparation may find its most valuable application. These anaemias include cases idiopathic in origin, cases associated with pregnancy and the puerperium, and those resulting from nutritional disorders such as sprue. Although a study of the literature may lead to the conclusion that these refractory anaemias are extremely rare in temperate climates, our own experience during recent years has led to a contrary opinion.

Personal observations in support of this suggestion have recently been made on three such cases of refractory megaloblastic anaemia of idiopathic origin, which are responding to oral administration of proteolysed liver. The details of these cases are not now submitted, as it is felt desirable to continue their observation for a longer period and to await the opportunity of studying additional cases.

It is also possible that various factors present in proteolysed liver additional to the liver principle of Castle may render this preparation of value in the treatment of certain anaemias associated with a normoblastic bone marrow.

Summary

A method is described for the production of a palatable and readily assimilable whole-liver preparation by means of enzyme digestion of raw liver with papain.

The name "proteolysed liver" is proposed for the resultant product.

Proteolysed liver administered orally has proved effective in the treatment of five cases of Addisonian pernicious anaemia.

The possible value of proteolysed liver in the treatment of classical pernicious anaemia and of refractory megaloblastic anaemias is discussed.

[*Note.*—It is necessary to state that proteolysed liver is not at present available commercially.]

Our thanks are due to Prof. D. M. Dunlop for allowing us to use two patients under his care for the purpose of this investigation.

REFERENCE

Shaw, G. E. (1939). *Quart. J. Pharm. & Pharmacol.*, **12**, 541.

THE RELATION OF SUNLIGHT TO DESERT SORES

BY

J. M. HENDERSON, M.D.
Captain, R.A.M.C.

Type of Sore

In the series here described the sores took the form of annular subepithelial whitlows occurring on the exposed surfaces of the limbs, and varying in size from 1 to 3 cm. To lend certainty to the diagnosis of what is undoubtedly a distinct clinical entity, only patients presenting six or more of these lesions were included in the group of 50 cases studied. The cases arrived at an advanced dressing station during July and Aug., 1942. They represent roughly a cross-section of the cases occurring among certain armoured divisional formations during this period. When complications did not arise all were treated as out-patients. Many cases were seen at a very early stage of the disease.

Differential Diagnosis.—The group of sores which are peculiar to desert countries are, in my opinion, those lesions of the exposed surfaces which are commonly seen in the form of subepithelial whitlows, and which are characterized by slowness of healing. Furunculosis is frequently seen in the desert; its differentiation is easy, as the lesions are typical and bear no resemblance to desert sores. Chafing of the feet by ill-fitting boots may give rise to septic sores; these heal rapidly when the cause is removed. Epidermophytosis of the feet may sometimes be complicated by sepsis; a march usually reveals the characteristic erythema and vesiculation of this disease. Insect-bites which have become septic are usually brawny and have a necrotic core. They are not infrequently found on those areas of skin which are exposed only in the sleeping individual —e.g., in the region of the ankles and shin.

Relation of Trauma to Occurrence of Sores

As trauma is an accepted aetiological factor its relation to this series will be described first. It is of considerable interest that 21 out of the 50 patients were unable to account for the presence of the sores. They stated that they did not believe them to be due to injury. In the 29 other cases the majority thought that one or more sores were due to knocks or cuts, but were able to point out a number of sores the presence of which they did not believe to have been caused by trauma. In 6 cases only was the statement made that injury had occurred at the site of every sore.

In cases in which sores are multiple it would therefore seem that a large number appear without history of injury. Bearing this in mind, it is of interest that 19 patients volunteered the information that their sores first appeared as what they described as "water-blisters." Apurulent vesicles were present in only five of these cases when they were first seen by me. Failure to observe vesicles in the majority of instances in which they were described by patients is probably due to the fact that they are present only in the early progressive stages of the disease. In the apurulent stage they vary from 2 to 10 mm. in size. Twelve to twenty-four hours after they are first seen rupture occurs and the sores become purulent in most cases. They become spreading subepithelial whitlows which are resistant to treatment, two to three weeks commonly elapsing before they have healed completely. It is therefore the stage of subepithelial whitlow which is usually seen.

Certain features of the original clear vesicles are of interest. Itch may be experienced in the parent skin for several hours before they appear, but when the vesicles are fully developed they neither itch nor pain. The lack of pain is in marked contrast to the later stages of subepithelial whitlow. When the patient comes for treatment for sores which are fully developed, one or more of these small vesicles may be present of which he is quite unaware. The vesicles were multiple in two of the five cases in which they were observed in this series. I have often seen them on skin which has been reddened by the sun and on the back of the hand, sometimes on skin which was shiny and even atrophic in appearance. Like the later stages in which whitlows have developed, there is no underlying palpable infiltration, nor is oedema of the dermis clinically apparent; marked inflammatory reaction is absent from the surrounding skin. They might thus be described as atrophic in appearance, and closely resemble the vesicles which arise from minute burns or scalds. 0.2 c.cm. of fluid from the vesicle of a colleague was introduced intradermally and aseptically into my own skin at a site corresponding to that of the vesicle of which use was made. No visible reaction occurred in the inoculated area. The vesicular fluid probably does not contain organisms which are markedly pathogenic.

It had to be borne in mind that these vesicles might have been caused by insect-bites. A common origin of this nature is, however, somewhat discounted in so far as they bore no noticeable resemblance to the usual reaction to insect-bite; oedematous papules and petechiae were not seen. Only one case of the series gave a history of having suffered mosquito-bites, and the clothes of the patients were free from lice and fleas. During the greater part of this period of two months the men were in areas in which mosquitoes and sandflies were not prevalent. On the other hand, for one period of three or four days some of these troops were in an area in which they were extensively bitten by mosquitoes, and oedematous papules appeared in large numbers during this short time. None of these papules were observed to develop into the vesicles which have been described, and no noticeable increase occurred in the incidence of desert sores. Insect-bites may occasionally be the cause of this vesiculation; it is unlikely that they are the causal factor in all instances. Similarly, where the vesicles may have resulted from insect-bites it is worth while bearing in mind that the lesion is atypical in the sore-bearing areas, papulation being absent and the lesion taking the form of a vesicle.

In one case which I have seen, though it was not included in the series, the sufferer was a regimental medical officer. Two vesicles were present on the knuckles, and a third had ruptured. He stated that he had definitely knocked the area. As he could be regarded as a reliable witness it is probable that some of these vesicles are the result of knocks that are insufficient to produce either bruising or scarification.

One may conclude that the subepithelial whitlows, or "desert sores," often made their appearance as the result of the skin having been abraded by minor injury. In the case of a large number, however, they first appeared as vesicles, which by their nature indicate intactness of the cuticle. The origin of the vesicles is uncertain. One case of the series had suffered mosquito-bites. A case is noted in which trauma had occurred at the site of the vesicles. In 18 cases, however, the cause was not apparent.

Complications

In this series two patients developed low-grade cellulitis and three adenitis. Lymphangitis was seen in one case of adenitis. There were no cases of diphtheritic palsy. In all five cases in which complications arose they appeared after the sores had been present for some days. They probably signified the contamination of the open sores by relatively virulent organisms.

Coincident Facial Impetigo

In 12 out of the 50 cases impetiginous lesions were present on the face, often in the neighbourhood of the mouth or ears. Thus facial impetigo was observed in one case out of every four. This must be regarded as an unduly high incidence, and leads one to believe that its occurrence is in some way related to the typical subepithelial whitlows of the limbs. In 4 cases impetiginous sores were present on the neck.

The Relation of Season

During the months of March, April, and May, 1942, I saw no cases of the disease, though during the same months a very large number of men were treated at morning sick parade. Cases reporting sick with minor illness were few during June on account of the circumstances of the battle. Case-taking disclosed that only one patient in the series claimed that he suffered from sores all the year round. One man stated that they first appeared in April. In 15 cases the onset occurred during the month of June, and of those claiming onset in July there were 26. Desert sore does not therefore seem to be

a disease of the late winter and spring, and cases only begin to appear in numbers in the early summer.

Of those who had not experienced a previous summer in the desert 1 had been in the desert three months, 4 for six months, 24 for eight months, and 1 for eleven months. It is significant that in these cases the sores chiefly made their appearance in either June or July rather than at times related to the duration of their stay in the desert. Only one of the patients spending their first summer in the Western Desert stated that he had previously suffered from desert sore. This turned out to have been in Afghanistan in similar country during 1939.

These cases suggest that the sores mainly appear during the summer. Confirmation of this was sought in the past histories of those patients of the series who had seen two or more desert summers. It was found that out of the 11 patients who had spent one previous summer in the desert 8 had suffered during that summer. The sores had appeared in typical form; they did not recur during the winter months. Of four who had had two previous summers in the desert, all had similar attacks during each of these summers. Only one patient had spent three previous summers in the desert, and he had suffered during all three. Significant statements volunteered by patients were: "They broke out about the same time last year, and the year before that"; and "They appear each year just when the sun gets hot."

In respect of season in the Western Desert, I was able to note the main changes in the weather. During the winter months of December, January, and February the weather is cold, and in 1941-2 cloudy days were numerous. In March, April, and May the cloudy days became less frequent and the weather warmer. By June the days had become relatively cloudless. In July the sun was noticeably hot day after day, and the sunlight relatively intense, giving rise to numerous cases of disturbance of vision. I myself tan deeply, and during July noticed a very marked increase in the laying down of pigment in the skin of my knees and forearms, to an extent greater than I had ever before experienced. The seasonal changes mainly resolve themselves into sunlight and heat factors. It was noticeable that the latter was always greatly modified by the desert wind. This enabled the individual to carry on activities which would otherwise have caused heat-stroke. No cases of heat-stroke were seen.

It would thus appear that, allowing a seasonal incidence of desert sore, the factor most likely to be of importance is sunlight. Bearing this in mind, it was decided to estimate, so far as was possible, the part played by the individual resistance to the sun's rays.

Relation of Orientation of the Individual to Sunlight

Differentiation of individuals resolves itself into two main groups. In the first, marked pigmentation of the skin occurs, and reddening and scaling are absent. In the second, in the extreme case, the exposed skin is unable to adapt itself, and erythematization is the chief reaction to exposure, attended in many instances by dryness of the skin and repeated scaling; the individual often points out that his skin is at this stage abraded by the least knock; he complains that he cannot "take the sun." While many persons fall between these two groups, it seemed from clinical study that it was among the second group that cases of desert sores were most frequently found. As might be expected, the majority of those in the first group also showed the natural evidences of pigment-forming powers; they were most often brown-haired and brown- or grey-eyed. Similarly, lack of pigment-forming power was most common among the fair-haired blue-eyed. The division is not a strict one: a small number of brown-haired, frequently blue-eyed individuals react badly, becoming florid rather than tanning, while a small proportion of the fair-haired develop quite a deep tan.

The percentage of fair-haired individuals occurring among the 50 cases of desert sores was compared with the percentage of fair-haired in a unit the personnel of which were drawn from all parts of Britain. Of the men with desert sores 70% were fair-haired, as opposed to 36% in the control group; and 76% were blue-eyed, as opposed to 28% in the control group. While these figures are drawn from a relatively small number of cases, the disparity is so marked as to indicate that desert sores are much more common among the fair-haired and blue-eyed than among other groups, thus confirming the impression gained by clinical experience. Of the 15 brown-haired individuals who developed the condition 11 were noted to react badly to sunlight.

It may therefore be stated that desert sores tend to occur among those whose pigment formation is below average.

Distribution of Sores

The sores occurred on the surface skin which was exposed. Subepithelial whitlows, however, were seen only on the hands, fingers, arms, and legs. They did not occur on the face and neck, though it has been pointed out that impetiginous lesions were not uncommon in these areas.

Incidence in Susceptible Areas

	Hands	Forearms	Upper Arms	Legs
Incidence in susceptible areas (%)	96	68	4	26
Bilateral (%)	88	32	2	8
Unilateral (%)	8	36	2	18

In the above table sores on the fingers were included under the heading of "hands." As is shown, the hands are most commonly affected. Three factors may be of significance in this respect: (*a*) The hands are most liable to suffer trauma; (*b*) the surface hair is less well developed than on the forearms; (*c*) in the very fair-haired the skin of the back of the hands often becomes red and glazed as a result of frequent and prolonged exposures to sunlight.

In the two cases in which there were sores on the upper arms, sores were also present on the forearms. The sleeves of the shirt were in both cases worn very short, and the effects of exposure to sunlight were as obvious on the upper as on the lower arms. It was characteristic that no sores appeared on the ventral aspects of hands or fingers. They were seen on most of the exposed areas of the forearms. No sores were observed, however, on the area of the skin normally resting against the body in the standing individual. The same part of the skin of the forearm is apposed to the driving wheel, or in the sitting person to the desk or table. Even in deeply tanned individuals it remains free of pigment to a great extent; it appears to be always protected from the sun's rays by posture.

With regard to the knees the sores were more frequently unilateral. The sores occurred here in the areas exposed when wearing shorts and stockings. This area tans uniformly in front and behind. Sores often occurred posteriorly as well as anteriorly.

Four Typical Cases

Case 1.—Trooper A. This case was illustrative of the average mild one. The sores were typical subepithelial whitlows, and were present on the back of the hands and the back of the right wrist. None were present elsewhere. They had first appeared at the beginning of July. Some of the sores he believed to have been due to knocks, but he was unable to account for the presence of others. He states that in the case of one sore, "A big water-blister came up and burst." His hair was fair to ginger and his eyes blue. He volunteered the statement, "My skin sunburns easily"; and again, "If I knock my skin against anything it breaks."

Case 2.—Rifleman B. The sores were very numerous in this case, which was a severe one. Whitlows were present on the back of both hands and on both forearms. One sore was present on the left upper arm, and three on the right upper arm. The sleeves were worn very short. The lower halves of the upper arms were sun-reddened and peeling in the area in which the sores appeared. There were neither sores nor scars on the part of the forearm which rests against the body in the standing individual; they were seen only on the reddened and peeling areas. The sores had first appeared at the end of June. The patient believed that the sores were due to knocks in some cases, but not in all. He stated, "I sometimes wake up and look at my hands, and find they are festering." He had spent two previous summers in the desert, and during the second of these had had sores on the knees as well. He believed they had broken out about the same time in each of these summers. He was fair-haired and blue-eyed, reddened rather than tanned, and laid down no pigment in the exposed areas.

Case 3.—Driver C. This case is characteristic of the 19 who volunteered the information that their sores first appeared as "water-blisters." The sores were typical. They were present on the right forefinger, the back of the right hand, and on the right elbow. One was present on the left upper arm, one on the right knee, and one

on the left knee. They first appeared at the beginning of July. He had been in the desert for eight months and had had no previous attacks. He was dark-haired and blue-eyed. He was florid in type, and stated, "I keep getting red and peeling."

Case 4.—Sergeant D. This case is of interest in view of the past history. The sores when first seen were very numerous and were present on both hands and knees. They had first appeared in July. This soldier had been in the desert for 40 out of the preceding 48 months. In 1939, when he first came up to the desert, short-sleeved shirts were being issued. During the summer of that year he suffered desert sores on the forearms as well as on the hands. Long-sleeved shirts were issued at the end of the year, and he wore the sleeves down, as he had found that the least knock took off the skin of the forearms, and the site of the knock went septic. He also found that since he had worn his sleeves down desert sores had not occurred on his forearms. He believed that his sores appeared only during the summer months. He was of the opinion that none of the sores were due to injury. They had all come up as clear vesicles, which he described as "sweat-blisters." His hair was fair and he was blue-eyed; he was very susceptible to sunburn.

Discussion

It has been shown that the multiple desert sores of this series appeared only in the areas of the limbs which were exposed to sunlight. In two cases in which sores were present on the upper arms shirt-sleeves were worn very short. One patient had discovered during a previous summer that he was able to avoid sores on the forearms by wearing his sleeves down. The sores were found chiefly in individuals whose powers of adaptation to sunlight were below average. They appeared in almost epidemic fashion at the beginning of the desert summer, of which the main characteristics are increased duration and intensity of sunlight and rise in temperature; the latter factor is modified by the more or less constant desert wind.

It would thus seem that the effects of sunlight play an important part in the aetiology of the sores. It is well known that, in the fair-haired especially, marked changes occur in the exposed skin as a result of repeated and prolonged exposure. The skin becomes erythematous, and frequent scalings take place. Eventually it is found that the least knock takes off the skin. This factor would appear to be of importance in cases in which sores follow slight trauma.

On the other hand, a large group existed in which the individual either was unable to give any history of trauma or believed that the site of only one or two sores had been injured. In spite of this, these cases often showed as many as 10 to 15 sores in the exposed areas, numerous sores being present on the forearms, where minor injuries or "knocks" are not noticeably frequent. Similarly, in a large number of cases the sores were stated to have first appeared as "water-blisters" or vesicles, and in some instances these vesicles were observed. If trauma had given rise to the latter it could only have been minimal, as the fact that the lesions took the form of vesicles precluded rupture of the cuticle. The vesicles were most often found on the areas of skin which were most exposed to sunlight, and in a few cases this skin had become both erythematous and atrophic in appearance. For the reasons which have already been detailed, it is most unlikely that they all followed insect-bites. Only one out of 19 patients stated that he had been bitten by mosquitoes; one other case is described in which the vesicles followed minor trauma. The origin of the vesicles is therefore obscure in a large number of cases. Since many appeared on areas which had been chronically sunburned, it may be that they represent a delayed reaction to excessive sunlight, the vesicles developing either on damaged skin as a result of additional sunburn or from minor and unrecognized trauma, the threshold of the injury having been lowered as a result of the changes in the skin. It is of interest to note that the vesicles resembled small burns or scalds in their clinical characteristics. They were the precursors of many typical desert sores which arose as a result of secondary infection of the vesicles.

The desert soldier tends to suffer excessive exposure to sunlight, and the reasons for this are not obscure. In the forward areas shelter from the sun's rays is lacking. Tents are not pitched by combatant units, as they lessen mobility and are aids to observation from the air; they are also hindrances to effective dispersal. Even the shade provided by vehicles is denied to many by the nature of their duties—e.g., gun crews, Bren-gun-carrier personnel, tank and armoured-car commanders, drivers of open trucks. No shade is provided by Nature. Personnel are therefore subjected to repeated and prolonged exposure to sunlight, which in other circumstances they would avoid.

Sand may act as a foreign body and delay healing where contamination occurs, though it should be possible to avoid this if the sores are seen early and are effectively dressed. Flies may be of importance in transferring virulent organisms; in fly-infested regions they may cluster on the sores even while the dressing is being changed. While the possibility of vitamin deficiency cannot be discounted in an appraisal of the aetiology of these sores, the absence of any of the features of scurvy in cases of desert sores would appear to indicate that deficiency of vitamin C is not of major importance. Also, sores have been seen to develop in desert troops who were receiving an apparent sufficiency of fresh food (personal communication of Colonel Ardagh, N.Z.M.F.).

Notes on Preventive Treatment

The following measures have been adopted so far as is possible in cases which I have seen recently:

1. Patients have been instructed to wear their sleeves down. Where the sleeves showed signs of having shrunk the men were told to exchange their shirts for ones with longer sleeves. Protection of the forearm is thus provided against trauma, the effects of sunlight, and insect-bite. If the sleeves are long enough some degree of protection is also afforded to the hands.

2. For the same reasons the susceptible were also advised to wear long trousers.

3. The difficulty of adequately protecting the hands and fingers is apparent. A supply of vanishing cream or of oil, preferably containing a small amount of antiseptic, might be helpful. It would have to be applied to the hands each morning after washing, as washing would destroy the protective film. Only the susceptible of a unit, usually well known to the medical officer by reason of many visits to the M.I. room, would need to be so supplied.

It is of interest to note that some "desert rats" who had experienced previous summers in the desert, and who were susceptible, had obtained a supply of germolene and of elastoplast while on leave. They had found that these were the most useful proprietary medicaments for the occasions on which duties compelled them to spend periods at some distance from the nearest medical officer.

Summary

It has been shown that the desert sores of this series bore a marked relation to exposure to sunlight.

It has been emphasized that changes are observable in the exposed skin of those who are susceptible to sunlight. It was in the exposed areas that the sores appeared, sometimes following trauma; in other cases, however, a history of trauma was not obtainable.

Small clear vesicles, resembling minute burns or scalds, were observed to be the precursors of many of the sores. In one such case these vesicles may have resulted from insect-bites; in another they probably followed minor trauma. In the majority of instances no definite aetiological factor could be elicited; the possibility that sunburn contributed the final trauma cannot be discounted.

It has been observed that, in the desert, various factors contribute towards an abnormal degree of exposure to sunlight.

The annual general meeting of the Society for Relief of Widows and Orphans of Medical Men was held on May 12, with Dr. R. A. Young in the chair. By the death of Mr. Warren Low the society has sustained a great loss; he had been president for thirteen years and always took the greatest interest in the society and its work. Dr. R. A. Young was elected president in his place. The annual report for 1942 showed that 56 widows had been granted relief and £4,412 distributed. One of the widows died at the age of 95; she had been in receipt of grants for 46 years and had received from the society nearly £4,000. Relief is granted only to the necessitous widows and orphans of deceased members. Membership is open to any registered medical man who at the time of his election is residing within a twenty-mile radius of Charing Cross. Full particulars and terms of subscription may be obtained from the Secretary, 11, Chandos Street, Cavendish Square, W.1.

LYMPHOGRANULOMA INGUINALE (TROPICAL BUBO)

BY

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With men of the Services scattered throughout the world it is certain that some tropical diseases will be met with increasingly in the United Kingdom. In times of peace small numbers of cases have always been encountered at seaports, but they are now arriving at inland hospitals; and some of the less-well-known ones will at first puzzle those whose lot it is to treat them.

One of the diseases very common among the natives of West Africa is tropical bubo, or lymphogranuloma inguinale ("L.G." for short), and as it also affects Europeans, though in smaller numbers, it will from time to time appear in hospitals at home. Having recently returned from a continuous service of 20 months in Sierra Leone, during which time my colleagues and I saw well over 300 cases of this disease, including about 30 in Europeans, a brief description of it based on this experience may be of help to those meeting their first few cases.

Aetiology.—It is a virus disease of venereal origin, occurring in the Tropics. It affects both sexes—the men by a primary lesion on some part of the genitalia, followed by enlargement of the glands in the groin; the women by vulvovaginitis, esthiomene, and proctitis, the last-named leading to stricture of the rectum, of which I saw very few cases, and these only while working for three months at Colonial Medical Service hospitals during 1941. Only as the condition affects the male will it be discussed here.

Symptoms

The primary lesion—in the form of one or more very small vesicles, pustules, or ulcers, rather like herpes, usually on the glans and inner surface of the prepuce, but also sometimes on the body of the penis—develops within a few days of intercourse, and unless complicated by superimposed infection is of fleeting duration. It causes little or no discomfort, and the patient scarcely ever presents himself at this stage. A few weeks later—3 to 8 weeks—a gland in one or both groins enlarges, usually at the inner end, though not uncommonly at about the middle, and on two occasions I saw the outer ones involved. By this time the primary herpetiform lesion has usually cleared up, though where the glands have enlarged early several minute scabs may remain as evidence; but, as has already been said, the primary lesion is essentially fleeting, and more often than not is entirely unnoticed by the patient, and therefore denied. This may be because, in the uncircumcised, if the prepuce is long and tight, where washing facilities are restricted owing to water shortage, or when the man has never been taught the wisdom of keeping himself clean, it is not uncommon to get a mild balanitis, so that the man thinks the primary of L.G. the same thing. However, L.G. is not confined to the uncircumcised.

It is therefore almost invariably for the enlargement of the glands that the patient seeks advice, and this rarely less than three weeks, and usually around six weeks, after the risk of infection. At first it may be entirely painless, in which case the patient either reports in order to find out the significance of the swelling, or not at all. Later on, however, pain develops. The condition then progresses through such constant phases that definite stages may be recognized: I have described these in official reports, and I repeat them here since the classification is a useful one upon which to base treatment and prognosis. It was described in 1942 in the *West African Military Medical Journal*, in collaboration with Major W. A. Law, R.A.M.C.

Stages of the Condition

Stage I.—A solitary, elastic, freely movable gland, adherent to neither skin nor deeper structures. Little or no constitutional disturbance. Rarely tender, but physical activity may cause pain.

Stage II.—The solitary gland becomes adherent to the skin and deeper structures, and there is a tendency for surrounding glands to enlarge, becoming fused with the original one. In Europeans it is common for the glands along the external iliac artery to be involved, sometimes forming a large mass above Poupart's ligament, and later spreading up to the common iliac and even aortic glands. In some instances there is a brawny mass in the groin, with *peau d'orange* appearance of the skin. The mass is tender and painful but non-fluctuant, and the constitutional upset considerable: temperature up to 103° F., pulse around 100, malaise, anaemia, bronchitis, jaundice, etc. This constitutional disturbance is always more pronounced in the European than in the native. A section of the original glands at this stage has a very characteristic appearance, looking like a gland packed with tiny abscesses.

Stage III.—The original mass, be it large or small, softens in one or more places, and fluctuates, and the general condition of the patient improves. I have never seen the glands along the external iliac artery break down. On section the softened area consists of a cavity broken up by interlacing trabeculations of fibrous tissue and containing sterile, glairy, sticky fluid that adheres to the knife, the whole process being the result of coalescence of the earlier tiny points of necrosis.

Stage IV.—Spontaneous fistulation has occurred and secondary infection quickly follows.

Comments on Diagnosis

It is, of course, essential to examine thoroughly for any other source of infection. Ulcers are so common on the legs of natives that doubt may arise as to the true nature of the glands. In the same way abrasions on the skin, chafing by the boot, athlete's foot, etc., may be a source in the white man. The Frei intradermal test will here be of great help, and gives a reliable result in 90% of cases. Small lesions in the urethra have been described, but none was seen in a series that we urethroscoped. General congestion of the urethra, on the other hand, was common.

In brief, it may be said that a mass confined to one or both groins, conforming to any of the four stages described, in the absence of any other possible source of infection and with a positive Frei test, spells lymphogranuloma inguinale. The condition most likely to be confused with it in Europeans is tuberculous glands, and we made this error in our first European case. However, the Frei test was not then available, but is the differentiating point.

Treatment

There is no doubt that among natives a number of cases never pass beyond Stage I, and subside spontaneously without the men ever reporting sick. It is an observed fact, too, that in some of those reporting in Stage I and put to rest in their billet for a few days the condition subsides spontaneously. But the difficult case is the Stage II one that in spite of rest shows no improvement but rather a worsening. It is to such cases that this communication especially draws attention, since the European behaves in this manner—hardly ever clearing up spontaneously, even in the rare event of not progressing beyond Stage I; the vast majority pass well into Stage II with marked constitutional effects. The various lines of treatment available are as follows:

1. Rest in Bed.—Local applications of heat to the glands by fomentation, antiphlogistine, or radiant heat and infra-red lamp.

2. Intramuscular injections of anthiomaline (10 to 20 injections), an antimony preparation, as described by Major W. A. Law in the paper already quoted.

3. Intravenous injections of sodium antimony tartrate.

4. Large Doses of Sulphonamide.—We began with sulphapyridine, giving as much as 96 g., spaced over 3 to 4 weeks, in three courses. Careful watch on the white cell count must be kept. Later on, because of the higher price of sulphapyridine, we ran a series on sulphanilamide, using about the same amount, at roughly one-third of the cost. Later on still, we treated some natives with intramuscular injections of a suspension of sulphapyridine in water. This requires about one-quarter of the above amounts, and was seemingly just as successful. The method was a natural sequel to the highly successful treatment of gonorrhoea in this way by Capt. England and others on the West Coast. Care has to be taken not to inject the drug near a large nerve root, as cases of permanent interstitial neuritis have been reported, though no accident occurred at a general hospital where this work was carried out. In order to avoid the risk of such a catastrophe the vastus externus muscle is the site of election.

5. Injections of triple typhoid vaccine (T.A.B.) 50 millions intravenously—about six injections at three-day intervals.

6. Surgical Excision.—We tried a small group of cases by this method. Those in Stage I do well, healing by first intention and requiring about ten days' hospitalization followed by a week's convalescence. Early Stage II cases can be treated by excision too, but the wound is liable to become moist, and in the brawny stage surgical intervention is contraindicated, the wound always breaking down.

Comments on Treatment

The untreated Stage II case will never resolve spontaneously—it tends to linger in Stage II for weeks and then the mass breaks down. Treatment by local heat hastens this breaking-down process but rarely encourages resolution. The various drug methods, on the other hand, cause a large proportion to resolve—often quite quickly; but even where this does not occur the mass breaks down quickly, and so in either event a prolonged Stage II is avoided. The majority of cases treated with anthiomaline, sodium antimony tartrate, sulphonamides, or T.A.B. are cured, apart from a little residual thickening in the groin, and fit to return to their units in 3 to 4 weeks; anthiomaline is perhaps the best by a few days, but it is expensive. Its chief advantage is that, where constitutional reaction is not great, it can be given to the man in his unit M.I. room, whereas the others require bed treatment. However, as most Europeans do get a marked constitutional disturbance, the point is not so important.

Stage III has been treated in many ways, and there is a natural temptation to incise the fluctuating swelling. This, however, is the worst possible treatment, for experience shows that secondary infection rapidly develops and the wound continues to discharge for weeks. All are agreed that under no circumstances should incision ever be practised. The best treatment is aspiration, which may have to be at several points because of the tendency to loculation, and it may have to be repeated once or twice. It must be carried out with aseptic precautions, and the punctures should be covered with a patch of sterile gauze and elastoplast. Another method is to use a seton, and a piece of silkworm-gut transfixing the cavity serves well, though the device is not so satisfactory as aspiration.

The treatment of Stage IV is really the treatment of the secondary infection; a combination of dry heat and sulphonamides, with rest in bed, is necessary, and is eventually effective.

Recurrence.—A small proportion of our 300 cases showed recurrence of the glandular swelling, but this soon subsided under the influence of a second, shorter, course of the original treatment.

I should like to acknowledge the work of the various officers who successively took charge of the V.D. Department, and to express thanks to Colonel L. A. Harwood, T.D., the commanding officer of this unit, for permission to publish these cases.

ARSENICAL ENCEPHALOPATHY

A COMPLICATION OCCURRING DURING THE TREATMENT OF SYPHILIS

BY

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AND

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The results obtained from the adequate treatment of syphilis with arsenical compounds are among the most gratifying in medicine. Most of the lesions disappear rapidly, and in the primary and secondary stages the Wassermann reaction is quickly reversed to normal, while subsequent treatment in these stages invariably results in a complete cure. The treatment, however, is not without the risks attendant on the administration of a powerful drug, and the toxic effects of arsenical therapy are many and varied. Fortunately the vast majority are mild, and the more severe types, such as deep jaundice and exfoliative dermatitis, are relatively uncommon. But it is to one of the rarest and most fatal complications, haemorrhagic encephalopathy, that we wish to draw attention.

During the past 18 months we have had opportunity of witnessing four cases which we consider typical of this condition. These patients were admitted to the wards after treatment as out-patients at the local clinics, and they are the first cases recorded during the nine years' existence of the wards.

Case I

A man aged 50 first attended the out-patient department on Nov. 21, 1940, with lymphopathia venerea. A positive test to Frei antigen was obtained. A Wassermann test was made as a routine measure; the result was doubtful. Four days later the test was repeated, and a strongly positive reaction was obtained. The patient gave a vague history of a penile ulcer in 1910. On Nov. 28, 1940, he began a course of mapharside and bismuth consisting of alternating bi-weekly doses of 0.04 g. and 0.06 g. of mapharside, and bismuth 0.2 g. bi-weekly. Five injections were given, and on the day following the last he was admitted to hospital in deepening coma. The pupils were small and equal, but responded to light. His knee- and ankle-jerks were present and equal, and the plantar response was flexor. His respirations were stertorous and he was doubly incontinent. There was no paralysis of the limbs, and the attitude of the hands and feet was at times strongly suggestive of tetany. Lumbar puncture showed that the fluid was under slight pressure. Fifteen c.cm. was removed, and 1 c.cm. of adrenaline was given four-hourly. Subsequent examination showed the cerebrospinal fluid to be normal. The temperature, which was 100.4° F. on admission, rose within a few hours to 104.2° F., and the man died.

At necropsy the brain was extremely congested on the surface. The cut surface showed very marked congestion of the small blood vessels in the white matter of both hemispheres. Microscopical examination revealed minute haemorrhages surrounding the small vessels. The only other positive finding was a pronounced fatty change in the liver.

Case II

A woman aged 22 attended the clinic with a gummatous ulceration of the hard and soft palates and ulceration of the left tonsil. Her father had a history of syphilis, and she was considered to be a case of congenital tertiary syphilis. She was 27 weeks pregnant. Her Wassermann reaction was strongly positive. Treatment began on March 10, 1942, with N.A.B. 0.3 g. and Bi 0.2 g. The patient returned on March 17 and was given N.A.B. 0.45 g. and Bi 0.2. On March 19 she complained of some headache and dizziness. She relapsed into coma and was admitted to hospital with athetoid movements of the left hand. On lumbar puncture the cerebrospinal fluid was under slight pressure. About 10 to 15 c.cm. was removed, and adrenaline 1 c.cm. was given. A slight increase in protein was found in the fluid. In a few hours the temperature had risen to 109° F., and the patient died.

Examination of the brain showed haemorrhages arranged in a symmetrical fashion in the medulla, both hemispheres, and the corpus callosum. The haemorrhages were punctiform and grouped together, occasionally coalescing to form a larger haemorrhage. They were particularly numerous in the white matter surrounding the basal ganglia, but were also present in the basal ganglia themselves.

Case III

A 24-year-old multipara was admitted to hospital on Jan. 29, 1941. It was her third pregnancy, the previous two having been stillbirths. She showed no clinical signs of either acquired or congenital syphilis. The Wassermann reaction and the Meinicke test were both strongly positive. She was then 32 weeks pregnant.

Treatment was given as follows. Jan. 30: N.A.B. 0.15 g., chlorostab 0.16 g. Feb. 3: N.A.B. 0.3 g. Feb. 6: N.A.B. 0.3 g., chlorostab 0.16 g.

Subsequent Course of Events.—Feb. 7: Patient complained of headache and nausea, vomiting once or twice. Feb. 8: The vomiting restarted and increased in severity. Eventually she became irrational and delirious. On examination there was no evidence of oedema or of renal tenderness. Her blood pressure was 155/90. A catheter specimen of urine showed no albumin, but sugar a trace and acetone ++. On auscultation the foetal heart was heard. A provisional diagnosis of toxaemia of pregnancy was made. An intravenous saline drip was set up and morphine given. Feb. 9: The patient was now comatose. There was spasticity of the arms, pupils were unequal, and the right plantar reflex gave an extensor response. Nothing abnormal was observed in the fundi. A lumbar puncture was done for diagnostic purposes. The cerebrospinal fluid was clear and not under pressure. There was no blood present. Treatment was given to reduce the cerebral oedema—viz., 50 c.cm. of 50% glucose intravenously and a solution of mag. sulph. 50% P.R. In the evening of Feb. 9 the patient died, the temperature rising to 104.4° F. before death.

Post-mortem Report.—Brain: There were punctate haemorrhages in the centrum ovale and in the roofs of the lateral ventricles. Microscopical examination showed multiple haemorrhages into the white matter. These usually had an obvious perivascular distribution.

Both " ring " and " ball " haemorrhages were present. Perivascular demyelination as described by Russell (1937) was particularly looked for, but no evidence was found with either the Marchi or the Loyez modification of the Weigert-Pal method. *Liver :* Microscopical examination showed marked cloudy swellings with occasional subcapsular haemorrhages. *Spleen :* Enlarged and soft; subcapsular haemorrhages and petechiae on the cut surface. *Kidneys :* Right showed subcapsular haemorrhages. The cortex was pale, with engorged vessels and glomeruli. The left kidney showed similar changes but no subcapsular haemorrhages. The *suprarenals* appeared normal.

The foetus was examined, particularly the liver. No *Spirochaeta pallida* were demonstrated, nor was there any evidence of syphilitic cirrhosis.

Case IV

A primigravida aged 18 was admitted to hospital on Oct. 29, 1941. She was then 20 weeks pregnant. On examination she was found to have a primary sore of the vulva (*Sp. pallida* +). The Wassermann reaction and Meinicke test were both weakly positive. Treatment was given as follows: Oct. 30: N.A.B. 0.15 g., chlorostab 0.16 g. Nov. 4: N.A.B. 0.3 g. Nov. 7: N.A.B. 0.3 g., chlorostab 0.16 g.

Subsequent Course of Events.—On the evening of Nov. 9 she complained of slight headache, and retired early to bed. The following morning she was stated to have had a fit. When seen a few hours later she was stuporous. There was no neck rigidity; the pupils were equal and reacted to light. Both plantar reflexes gave a flexor response. Heart and lungs were clear. Her blood pressure was then 150/90. A catheter specimen of urine contained a trace of albumin only. The blood urea was 42 mg. per 100 c.cm.

A diagnosis of haemorrhagic encephalitis was made. Treatment consisted of repeated drainage of the theca. The first lumbar puncture was done within five hours of the fit.

C.S.F. Laboratory Data

	10/11/41	11/11/41	12/11/41	14/11/41	21/11/41
Amount withdrawn	45 c.cm.	30 c.cm.	20 c.cm.	10 c.cm.	5 c.cm.
Appearance ..	Clear	Clear	Clear	Clear	Clear
Fibrin clot	None	None	None	None	None
Total protein ..	0·09%	0·12%	0·14%	0·09%	0·04%
Globulin	Increased	Sl. inc.	Sl. inc.	Sl. inc.	Normal
Sugar	Normal	Normal	Normal	Normal	Normal
Chlorides	Normal	Normal	680 mg.	650 mg.	Normal
Lange	Negative	Negative	Negative	Negative	Negative
Cells (lymphocytes)	2 per c.mm.	2 per c.mm.	2 per c.mm.	2 per c.mm.	2 per c.mm.
W.R.	Neg. in all dilutions				Neg. in all dilutions

In addition to drainage of the theca by lumbar puncture 10 c.cm. of mag. sulph. 20% was given intravenously twice during Nov. 10, and thereafter hypertonic mag. sulph. P.R. The patient was kept under the influence of morphine. On Nov. 11 a morbilliform rash appeared on the neck, breasts, and shoulders. This rash disappeared within 24 hours. The maximum temperature was 101.2° F. on Nov. 12; on Nov. 13 and thereafter it was normal. Gradually the patient improved, and two days after the onset of the condition was fully conscious and alert. For a further four to five days she remained irritable and restless. Finally she became her usual self in behaviour and intelligence. A blood Wassermann reaction and Meinicke test done on Nov. 25 were both negative. Antispecific treatment with bismuth was started on Nov. 28, and thereafter was continued at the out-patient department.

On March 11, 1942, she was delivered spontaneously of an apparently healthy full-time male infant, whose weight at birth was 6 lb. 13 oz. The Wassermann reaction of the cord blood was negative and no *Sp. pallida* were demonstrated in the umbilical cord. On April 24 a blood test was done on the child, the Wassermann reaction and the Meinicke test being negative. Radiographs of the long bones revealed nothing abnormal.

Discussion

The so-called haemorrhagic encephalitis is the most fatal of all complications resulting from arsenotherapy. Fortunately it appears to be very rare. Stokes (1934, 1939) observed one case in 63,000 injections. Glaser, Imerman, and Imerman (1935) in a review of the subject found one death due to cerebral complications in every 5,398 cases treated and in every 28,768 injections. Paley and Pleshette (1939) reported one fatality from haemorrhagic encephalitis among 1,200 treated cases of pre-partum syphilis. It is stated that males are slightly more often affected; but of females reported over 70% were pregnant. They were apparently healthy adults, the average age being 22.5 years. The ante-natal cases were usually primigravidae, and the average duration of pregnancy was 5.5 months. In our series of cases the ages were 50, 22, 24, and 18 years. All three females were pregnant. The periods of gestation were 27 weeks, 32 weeks, and 20 weeks respectively. From our own limited experience we suspect that the condition is not so rare as the figures quoted suggest. It is conceivable that such cases might be admitted to medical and ante-natal wards, where, in ignorance of recent antispecific treatment having been given, the diagnosis is not made.

The mortality rate is high. Most cases terminate fatally, although recovery has been reported in several instances by David Lees (1940), Netherton (1934), Dickens (1928), and Parnell and Dudley (1920).

Pathology

The pathological changes are most pronounced in the white matter of the brain, although similar lesions are found to a less extent in the grey substance. It is stated that the sites most frequently involved are the corpus callosum, the caudate and lenticular nuclei, the pons, and the medulla. Globus and Ginsburg (1933) in their description of two cases following arsphenamine therapy indicated that the main central lesions were " ring " haemorrhages. The haemorrhages were pericapillary, and there was no evidence of inflammation. These authors suggested, therefore, that the term " pericapillary encephalorrhagia " was more appropriate than " haemorrhagic encephalitis." In addition to these characteristic haemorrhages reactive gliosis was present in the neighbourhood of the affected blood vessels.

In our post-mortem reports these pathological findings have been confirmed. Pathologists agree, however, that such lesions as described are not peculiar to arsenical encephalorrhagia. They have been observed in association with many diseases.

Treatment

Since the majority of cases are rapidly fatal and are recognized only at necropsy, there is in the literature a paucity of information regarding the relative merits of suggested modes of treatment. In the one case of our series which did recover, repeated drainage of the theca was efficacious. This was instituted 5 hours after the occurrence of the initial convulsion and therefore, one may conclude, before the onset of any appreciable brain haemorrhage or necrosis. In addition this patient was kept under the influence of morphine. Other writers have suggested such procedures as venesection, the giving of large doses of adrenaline intramuscularly, repeated intravenous injections of sodium thiosulphate, calcium preparations, snake venom, and continuous inhalations of oxygen with intravenous injections of urotropin and caffeine.

Theories

The theories as to the cause of haemorrhagic encephalitis are numerous and, examined individually, are not altogether conclusive. As regards the toxicity of the drug administered, no trivalent arsenical is free from the risk of producing this condition. Sulpharsphenamine is stated to be associated with a higher incidence than the other members of the group. N.A.B. and mapharside, the drugs used in the cases reported, are considered to be less toxic than many, and, moreover, the N.A.B. was dissolved in 10 c.cm. of 10% sodium thiosulphate.

The dosage does not seem to play a prominent part in the aetiology, since the largest dose of N.A.B. given was 0.45 g. and of mapharside 0.06 g. Of the other causative factors cited by previous observers, none of our cases showed evidence of chronic arterial disease nor of liver or adrenal insufficiency.

It is reasonable to suppose that pregnancy must have some bearing on the aetiology, since, as already quoted, of women with haemorrhagic encephalitis 70% were pregnant. In one of our cases toxaemia of pregnancy was considered as a provisional diagnosis, and it is possible that an additional toxaemia due to pregnancy may be a predisposing factor. On the other hand, in our own experience a large number of women with ante-partum syphilis, many of them with marked general debility, have been treated with trivalent arsenicals without developing haemorrhagic encephalitis. Furthermore, during treatment a small proportion have presented definite signs of toxaemia of pregnancy. These did not become cases of haemorrhagic encephalitis.

Our post-mortem findings would appear to support the theory of direct toxic action on the brain capillaries. The

reason for this apparent selection is obscure, and our observations throw no new light on this aspect. From the study of the four cases reported one interesting feature emerges—namely, the interval between the first injection and the onset of the condition. It is not without significance that in three of them haemorrhagic encephalitis occurred about the tenth day after beginning treatment—a time when it is not uncommon to find other signs of intolerance to arsenic in the syphilitic patient. Indeed, one of our patients did manifest a concomitant morbilliform rash. Haemorrhagic encephalitis does occur in patients receiving arsenical therapy for non-syphilitic nervous disorders, but not with the same characteristic time interval. Therefore one may assume the syphilitic infection itself cannot be excluded as a factor in the aetiology.

Finally, two extraneous factors may be mentioned. It will be noted that these four cases occurred in winter-time, when as a general rule vitamin intake is at its lowest, especially vitamin C. Also they have been reported since the onset of the war. Conditions in wartime naturally impose greater mental stress and strain on the individual, and more so on the patient with syphilis.

Conclusion

Haemorrhagic encephalitis is a rare complication of treatment with arsenic in syphilis.

It is impossible to determine in advance the type of individual who will develop this complication, but the pregnant woman with syphilis should be regarded as a "potential reactor."

The clinical signs are those of cerebral irritation, and may be preceded by such symptoms as headache and dizziness.

The condition is rapidly fatal unless diagnosis is prompt and treatment immediate.

We wish to thank Dr. Ross and Dr. Sanderson for kindly allowing us access to their case.

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A CASE OF HAEMORRHAGIC ENCEPHALOPATHY FOLLOWING ARSENICAL THERAPY

BY

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The following case of arsenical encephalopathy is thought worthy of publication in view of the few references to this complication of arsenical therapy in recent British literature, and also because of the increasing incidence of syphilis at the present time.

Cases in the Literature

Serious cerebral complications following treatment with arsenical preparations are fortunately rare. Haemorrhagic encephalopathy or serous apoplexy is a complication of arsenical therapy which usually ensues within two or three days of the second or third injection of an arsenical preparation. The onset is characterized by drowsiness, irritability, and depression, followed by epileptiform convulsions and coma. The prognosis is bad unless cases are recognized early and prompt treatment is instituted. Lees (1937) mentions nine cases, five of which recovered. Winter (1940) describes a case of primary syphilis in a healthy young adult in which symptoms developed two days after the second injection of an arsenical preparation. The early symptoms in Winter's case were slight nausea, headache, and feverishness. Examination revealed a scarlatiniform rash on the trunk, limbs, palms of the hands, and soles of the feet. The temperature rose to 104° F., the rash became more marked, and oedema of hands and arms developed. Vomiting was a feature, but mental and nervous symptoms were lacking. The rash became purpuric, and about 48 hours from the onset mild mental symptoms developed, followed by loss of consciousness and death. Necropsy revealed oedema of the brain and multiple haemorrhages throughout the brain substance. Friedman and Newman (1941) describe a case of encephalitis in a syphilitic subject aged 28; again the symptoms appeared shortly after a second dose of an arsenical preparation. These symptoms were epileptiform convulsions, projectile vomiting, and rectal and urinary incontinence. Examination revealed no abnormal neurological findings. The cerebrospinal fluid was not under pressure; it contained 15 cells per c.mm. and total protein 70 mg. per 100 c.cm. Their case recovered, after administration of adrenaline intramuscularly and glucose intravenously. Friedman and Shinefeld (1941) describe two cases in syphilitic children, both of whom died. In their cases symptoms occurred after several injections of arsenical preparations. The symptoms were irritability, convulsions, and coma. In one case cerebrospinal-fluid protein was 297 mg. per 100 c.cm. Russell (1937) describes the pathological findings in three cases. She found perivascular and ring haemorrhages, and also perivascular non-haemorrhagic areas of necrosis and demyelination in the central nervous system. All three were serologically positive cases of syphilis in young adults, the eldest being 31 years old. Symptoms in two of her cases appeared shortly after the second injection of an arsenical preparation; in the third case symptoms followed the third injection. All three patients died within four days of onset.

Case Report

Male aged 22. No previous history of ill-health. Treated for acute gonococcal infection from March 4 to 12, 1942, in V.D. hospital, and readmitted to the hospital on April 12 with multiple indurated ulcers on coronal sulcus. *Spirochaeta pallida* present on examination with dark-ground illumination. Treatment consisted of: April 11: novostab 0.45 g., chlorostab 1 c.cm. April 14: neokharsivan 0.3 g. April 18: novostab 0.45 g., chlorostab 1 c.cm. On April 21 the patient felt out of sorts, hot, and flushed; temperature 102° F. During the next two days temperature varied from 100° to 102° F. He was depressed, but made no special complaint. At 7 a.m. on April 23 he had an epileptiform convulsion and vomited bile-stained fluid; admitted to E.M.S. hospital.

Examination.—Temperature 98° F., pulse rate 78, respirations 20. Semi-comatose on admission; incontinent, with noisy moaning respirations; colour good. Pupils equal, circular, and contracted: reacted sluggishly to light. No neck rigidity, and Kernig's sign negative. All reflexes were exaggerated and ankle clonus was present; plantar responses doubtful flexor; abdominal reflexes present and normal. Other systems normal. Blood pressure 120/70. *Fundi:* Slight blurring of disk edges right side. Left side normal. *Urine:* S.G. 1030; no abnormal constituents; no red blood cells or casts. White cell count 12,000. Lumbar puncture at 11 a.m.: cerebrospinal fluid not under pressure; fluid contaminated with blood. *Blood:* Wassermann reaction ++, Kahn negative. Flocculation test, 1:16.

A few hours after admission plantar reflexes became extensor and respirations stertorous. By evening temperature had risen to 104° F. Pulse rate 118; respirations 40. Lumbar puncture repeated: cerebrospinal fluid clear; pressure 250 mm. water; cells 5 per c.mm.; Wassermann reaction negative; protein 230 mg. per 100 c.cm. By the following morning coma was deep, with marked venous congestion. Venesection performed and 14 oz. of blood withdrawn. Lumbar puncture repeated—10 c.cm. cerebrospinal fluid removed: pressure 260 mm. water; cells 5 per c.mm.; protein 270 mg. Kahn negative. By 2 p.m. on April 24 coma had deepened; temperature 104.8° F., pulse rate 108, respirations 32. Marked cyanosis, and at 6 p.m. patient had two epileptiform convulsions. Lumbar puncture repeated. Thereafter coma steadily deepened, and after two further epileptiform convulsions the patient died at 3 a.m. on April 25.

Necropsy

Apart from the central nervous system, all organs were normal except for punctate haemorrhages on the upper surface of lower lobe of right lung.

Brain: Macroscopic Appearance.—Considerable congestion of the pia-arachnoid all over the brain, with several irregular haemorrhages—one on the upper surface of the left half of the cerebellum, one on the contiguous lower surface of the corresponding occipital lobe, and

a third at the right temporo-sphenoidal lobe. Small cerebellar cone round the brain-stem. Section of brain revealed congestion of grey matter and small congested vessels in the white matter. After fixation, sections of brain revealed a fair number of petechial haemorrhages, more marked in the white matter. Macroscopically the grey matter of the brain was congested, giving a pinkish hue. Many small congested vessels in white matter.

Microscopical Examination.—The lesions present were not numerous, therefore careful searching was necessary. Some blocks of brain tissue did not reveal any lesion. No particular part of the brain was especially involved, the lesions being irregularly distributed throughout the brain substance. They were perhaps more obvious at the junction of white and grey matter than anywhere else in the cortex. Main lesions in intracerebral vessels, consisting of endothelial swelling associated with ante-mortem thrombi, partially occluding the lumen of the vessels. Some of the thrombi were infiltrated with polymorphonuclear leucocytes, many of them eosinophils. Occasionally there was evidence of vascular rupture, with red blood cells and eosinophilic material in the Virchow-Robin spaces. No obvious change in nerve cells themselves, and there was absence of perivascular cuffing and other signs of encephalitis. Emulsions of the brain were injected into rabbits and mice with negative results.

Treatment

This consisted of repeated lumbar punctures. Adrenaline was given in doses of 1 c.cm. intramuscularly four-hourly, and sodium thiosulphate was injected intravenously. Venesection was also done. Treatment to be successful must be started as soon as possible, and therefore it is of great importance that this complication of arsenical therapy be quickly recognized. In every case of sudden cerebral disaster in a young adult the question of previous arsenical treatment should be considered.

Discussion

This picture conforms to the usual type previously described in the literature—severe cerebral symptoms, with coma and epileptiform convulsions. The onset generally occurs after the second or third injection of an arsenobenzene preparation, and can happen as readily in the healthy subject as in the unfit. The main features in the present case are the haemorrhages, and extreme congestion of vessels of white matter coupled with blocking of cerebral capillaries and occasional rupture. There was no evidence of non-haemorrhagic perivascular areas of necrosis and demyelination as observed by Russell in her cases. This may have been due to the fact that this patient did not survive long enough for these findings to develop. Two of Russell's cases in which these changes were present survived for four days after onset of acute symptoms. The third of her patients died within six hours; evidence of necrosis and demyelination in the central nervous system was scanty.

The causal factor in arsenical encephalopathy is unknown, and seems to be unrelated to the arsenic radical, as poisoning by arsenic in an inorganic form does not give rise to such cerebral symptoms. It also seems unlikely that overdosage is at fault, as in most recorded cases symptoms have arisen shortly after the second or third injection. It is apparently not of the nature of a Herxheimer reaction, because cases are recorded (Glaser, Imerman, and Imerman, 1935) in which cerebral complications followed arsenical therapy in non-syphilitic subjects.

As symptoms occur most frequently after the second or third injection of an arsenical preparation it seems possible that the cerebral phenomena may be in the nature of an allergic reaction, although this does not seem to be of a permanent nature, as Lees mentions a case in which treatment with an arsenobenzene compound administered intramuscularly was resumed after recovery from haemorrhagic encephalitis without ill effects. There appears to be some relation between purpuric eruptions due to arsenobenzene preparations and haemorrhagic encephalitis (Winter, 1940). It may be that both are due to a toxic action of the benzene radical on capillaries. Organic arsenicals are well known as a cause of thrombocytopenic purpura, and it is possible that in some cases of haemorrhagic encephalopathy the toxic action is due to disintegration of arsenobenzene compounds in the blood, with resulting thrombocytopenia and capillary damage. The case described by Winter in which purpura was a feature could fit in with such a theory. I have been unable to find any reference in the literature to the platelet count in arsenical encephalitis.

The raised cerebrospinal-fluid protein in this case, with a normal cell content, is unusual, as was the increase in the C.S.F. pressure. In most cases described the protein has been normal and the pressure also normal. In the present case, as in others described, the Wassermann reaction was positive in the blood but negative in the C.S.F.

In most cases previously recorded, cerebral complications of arsenobenzene therapy are referred to as haemorrhagic encephalitis. In view of the clinical picture and pathological findings, encephalopathy seems a more fitting description to apply to this complication.

Summary

A case of arsenical encephalopathy with pathological findings is described.

Attention is drawn to the need for early recognition of this condition, as treatment seems unavailing unless instituted in the first few hours after onset.

A short review of the literature is given. No adequate aetiology has been found to account for cerebral complications following arsenobenzene therapy.

I wish to thank Lieut.-Col. G. L. Montgomery, R.A.M.C., Assistant Director of Pathology, Scottish Command, for the post-mortem findings in this case, and Dr. A. A. F. Peel for advice and criticism; also the Department of Health for Scotland for permission to publish this report.

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ETHYL CHLORIDE ANALGESIA

BY

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The term "analgesia" implies the loss of pain sense without the loss of consciousness or the sense of touch (Guedel, 1937). It is generally accepted that during induction of anaesthesia by inhalation a phase of analgesia is passed through (Guedel, 1937). This phase starts at the beginning of induction with a relative blunting of the sense of pain (relative analgesia), and passes to a complete state of analgesia (total analgesia). The analgesic phase ends with the loss of consciousness of the patient, some drugs giving a longer and better analgesic period than others. These drugs have been used for a variety of purposes: chloroform analgesia in obstetrics; trichlorethylene analgesia for the relief of pain in tic douloureux (Striker *et al.*, 1935) and more recently for painful dressings; nitrous oxide in combination with air or oxygen in midwifery and dental work (Minnitt, 1934).

The limitation of the method is the difficulty of maintaining the analgesic state without slipping into the second and most dangerous stage of anaesthesia with its attendant risk of ventricular fibrillation. Lincoln (1941) has made an advance in the production of analgesia by using ethyl chloride in combination with nitrous oxide by the nasal route. It was considered that it might be of advantage to investigate the effects of ethyl chloride alone without using nitrous oxide. This we have done with success in 90 cases, the majority being dental extractions. All these patients were soldiers, many of whom are anaesthetic-resistant subjects.

The Method

The apparatus required is two tubes of ethyl chloride, a dental prop, some vaseline, and a roll of gauze. The lips are smeared with vaseline and a dental prop is inserted. An oblong of gauze, about 2 in. by 6 in., is crumpled and placed between the teeth, but not so far back as to cause gagging. The patient is asked to breathe to-and-fro through his mouth alone. He is told that the vapour will not put him to sleep but will

prevent pain. Ethyl chloride is then sprayed on to the gauze on and off for 45 seconds. The amounts we have used vary between 4 and 9 c.cm., the average being about 6 c.cm. If the eyelids are seen to flicker the patient is ready; otherwise it is better to rely on the time period entirely. The gauze is pushed aside and the operation completed. The gauze is then removed and the patient asked to take one or two deep breaths; by the time he has rinsed his mouth out he is ready to leave the chair.

Of the 90 cases 70 were dental extractions and 20 were minor operative procedures, mainly incisions of abscesses. In all cases analgesia was achieved; there were no post-operative complications. The dental cases were not confined to single extractions of upper and lower incisors, as 33% were molars or pre-molars. In several cases a number of teeth were removed, in one case seven. The majority of cases were those in which local anaesthesia was contraindicated. Many of the cases were those in which the patient was a difficult subject, being uncooperative and fearful, as this was his first visit to a dental surgery.

Comment

The advantages of ethyl chloride are many. It is a safe and rapid agent (Hewer, 1930) requiring no apparatus. The method is simple to learn and easy to apply. By Lincoln's (1941) technique of oral breathing induction is pleasant; there is the psychological benefit of having no mask, and there is no struggling—not even by the anaesthetic-resistant patient.

Total analgesia lasts from 60 to 120 seconds; recovery is as rapid as with nitrous oxide. There are no after-effects: we have had none, and in a series of 2,200 cases only 6 complained of nausea (Lincoln, 1941).

It would seem that ethyl chloride analgesia might be useful, particularly in wartime, in the painless extraction of teeth and for such simple operative procedures as opening superficial abscesses. It is cheap, safe, and portable, with rapid induction and rapid recovery.

Summary of Conclusions

Ethyl chloride alone by oral breathing will produce analgesia—that is, a loss of sense of pain with the retention of consciousness.

The method is simple, safe, and rapid, and can for short procedures compare in every respect with nitrous oxide analgesia.

We wish to thank Dr. C. Langton Hewer, without whose assistance this article would not have been published; and Lieut.-Col. Ashley Daly, Adviser in Anaesthetics to the Army, for permission to publish it.

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Medical Memoranda

Post-scarlatinal Thrombophlebitis Migrans

Thrombophlebitis following scarlet fever is a rare event. The last reported case appears to be that of Rolleston and Ronaldson (1940). Previously Huenekens and Siperstein had recorded a case in 1923. These authors give a full review of the literature, in which they could find only 9 cases reported since 1882.

Case History

A boy aged 11 was admitted to the East Malling Isolation Hospital on Feb. 13, 1942. He had complained of a sore throat for the past two days, and on admission showed the usual signs of mild scarlet fever. The temperature was 100°, the rash was typical, and there was marked circumoral pallor. The throat was sore, with exudate on the tonsils, and some cervical adenitis was present. The next day his temperature was normal, and he made a rapid recovery from the acute stage. He began to peel on the thirteenth day.

On Feb. 25, 12 days after admission, the cervical glands became more enlarged and there was slight pyrexia. He was given sulphapyridine 2 days later, and the temperature became normal in 48 hours. The sulphapyridine was continued for a further 5 days until a total of 11 g. had been given. At the end of this time the swelling of the glands was much less and the general condition satisfactory. Two days after this, on March 7, his temperature rose again, but there were no signs or symptoms to account for it. However, 48 hours later a painful red swelling appeared on the dorsum of the left foot, extending from the base of the great toe for 3 in. upwards. This was 25 days after the onset of the rash. He was again given sulphapyridine. Three days later inflamed veins could be seen and felt extending from the inflamed area on the left foot up to the knee. The leg was oedematous below the knee, and the popliteal vein was tender. The tongue became furred and the boy looked ill. The next day the patient was better. The temperature was normal and there was less oedema of the left leg. A further 11 g. of sulphapyridine had been given, and the dose was reduced to 0.5 g. t.d.s.

Twenty-four hours later, however, on March 14, the temperature rose again to 100°. On examination the left leg was still improving, but the right popliteal vein was tender and there was obvious phlebitis of the superficial veins below the right knee. On the following day there was oedema of the right leg below the knee, and the right internal saphenous vein was tender below the groin. The temperature rose to 101° and the patient was seriously ill. Anti-scarlatinal serum, 3,000 U.S.A. units (B.W. & Co.), was injected intramuscularly. The next morning he was better, having had a good night, and his temperature had fallen to 100°. The left leg had recovered, but the whole of the right leg was oedematous. The girth of the middle of the right thigh was 2¼ in. greater than that of the left. The right internal saphenous vein was tender and inflamed along the whole of its course, and there was tenderness in the right iliac fossa.

The patient by now had taken 33 g. of sulphapyridine since the beginning of his illness, and a blood count was made by Dr. Griffiths of the Kent County Laboratory. This showed: R.B.C., 3,860,000; Hb, 71%; C.I., 0.92; W.B.C., 15,800—polymorphs 90%, lymphocytes 7.5%, monocytes 2.5%. A blood culture proved sterile. Sulphapyridine was continued (3 g. a day), and on March 18 the girth of the right thigh was 3 in. greater than that of the left. The oedema had spread upwards over the right iliac fossa and the right loin. Enlarged superficial veins were seen over this area. The next day the patient was better. The temperature was falling and the tongue was getting cleaner. Three days later, on March 22, the temperature was normal and the oedema over the right loin and iliac fossa was much less.

On March 24 sulphapyridine was discontinued after a total of 41 g. had been given in 3 weeks without toxic effect. The patient was improving rapidly. The tongue was clean, and there was no pain or tenderness in either leg. The girth of the right thigh was only 3/4 in. greater than that of the left. A fortnight later all oedema had gone and the patient was very well. After a further fortnight's convalescence he was allowed to get up, having had a normal temperature for a month. He went home one week later, on April 28, having been in hospital 10¼ weeks.

When seen on Oct. 7, 1942, he was in excellent health. The only complaint was an occasional feeling of "heaviness" in both legs, especially the right, but he was able to run and play games. There was no oedema, but the girth of the right thigh was still 1/2 in. greater than that of the left.

Comment

A case of thrombophlebitis migrans occurring on the twenty-fifth day after scarlet fever is described. The veins of both legs and the right external iliac vein were involved. Improvement was noted after the administration of antiscarlatinal serum, but sulphapyridine in the doses given did not appear to modify the course of the disease.

West Malling, Kent. J. VINCENT BATES, M.B., B.Ch.

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An Unusual Retrocorneal Phenomenon

The following note on an unusual occurrence may be considered interesting enough to warrant publication.

Having removed a foreign body from the *left* cornea of a man aged 33, my attention was drawn to his *right* eye, where I saw a bright pink globule of about 1.5 mm. diameter, situated in the middle of the posterior surface of the cornea, the eye otherwise being quite normal. On examination under the slit-lamp the globule had—to my surprise—disappeared, but instead there was a faint reddish glow at the limbus about 12 o'clock. When the patient was asked to lie down again the spot was seen migrating slowly from the limbus towards the middle of the cornea, and always rose to the highest point of the anterior chamber as the eyes were turned in different directions.

The patient's record card showed that he had attended the hospital in Sept., 1942, when a foreign body deeply embedded in the stroma of the *right* cornea was removed and perforation with escape of aqueous occurred. Prontosil ointment 1% was instilled and a pad and bandage applied. The eye developed a mild iritis but healed in a week's time. A month later the patient complained again of photophobia and irritation, which quickly settled.

It would appear that owing to the pressure of the bandage a small portion of the prontosil ointment was forced into the anterior chamber, where it remained undissolved and unchanged without causing any trouble or inconvenience to the eye up to date (eight months). Neither the patient nor his friends have ever observed this striking appearance, since it is not visible when the patient stands upright.

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Reviews

PROBLEMS OF TRAUMA

The Pathology of Trauma. By Alan Richards Moritz, M.D. (Pp. 386; 117 engravings. 28s.) London: Henry Kimpton.

The name of the author of this work and of Prof. Wolbach, mentioned in its preface and elsewhere, and the illustrations depicting specimens in the famous Warren Museum, recall happy memories of a recent visit to Boston during this war, an academic sojourn in a famous hospital associated with Harvard University, and the privilege of meetings with the above two distinguished pathological savants. The mere mention of Harvard in connexion with this work is a sure hall-mark of its excellence; the assembling of the material contained in the book, together with the comprehensive bibliography, has for its purpose the lightening of the labours of clinicians and pathologists confronted with problems associated with trauma, and must be considered a timely contribution to the literature of this period of violence and force, which reign throughout the whole world just now.

This work is for the graduate rather than for the medical student, and is not likely to replace such popular textbooks of forensic medicine as Dixon Mann, Smith, or Glaister in the British undergraduate library. Those who have lived through the days of heavy air bombardment of this country will be gratified to find reference to the renal failure associated with crush injury of the extremities; and mention is made of the work of Bywaters and Beall, of Belsey, and of Patey and Douglas Robertson of Middlesex Hospital in this connexion. Blast injuries of the lungs have not escaped the notice of the author. There is an informative section dealing with the less well known subject of cardiac contusion, to which subject Moritz has himself made other contributions. One is glad to note that he has culled material from Sir George Makins's classical work on *Gunshot Injuries of the Blood Vessels*, which was based on that famous surgeon's experience in the South African War and the war of 1914-18.

An abdominal surgeon not unnaturally turns to those pages which deal with injuries of the abdominal viscera, and a certain surprise is felt at the failure to find amidst an extensive bibliography pertaining to traumatic lesions of this region any reference to the work and enormous experience of such British surgeons in the casualty clearing zone in the last great war as Sir Cuthbert Wallace, John Fraser, Hamilton Drummond, Owen Richards, H. H. Sampson, Gordon Bell, or Richard Charles. The total experience of these surgeons embraces a mass of material from which valuable information might surely have been gleaned.

The pathology of the ruptured intervertebral disk is included in the pages of the book, as might be expected of a condition which owes its recognition to the work of transatlantic surgeons. The section devoted to injuries of the female genital tract, including rape, occupies many pages and should satisfy the most critical medico-legalist or gynaecologist. There is a discussion as to a traumatic origin of hydrocele of the male tunica vaginalis, but no mention is made of traumatic rupture of vaginal hydrocele, a definite clinical entity which has attracted the notice of British and French writers.

The illustrations in the book are numerous; the microscopical reproductions are excellent and illuminating, and the diagrams are particularly helpful.

G. GORDON-TAYLOR.

INTERNAL MEDICINE: A MISCELLANY

Advances in Internal Medicine. Volume I. Editor, J. Murray Steele, M.D. (Pp. 292. 21s.) London: William Heinemann.

In previous reviews we have questioned the wisdom of books of this kind, which bring together topics whose only unity is their novelty. A man who tries to keep abreast of current literature—and we can imagine no other man reading a book of this kind—finds need of books to bring order and perspective into the many facts he has stored up or forgotten. Hence useful books must confine themselves to a single sector or allied sectors of the field of advance. The present book supplies something for all tastes and is therefore likely to satisfy none. The ten different articles it contains deal with the Miller-Abbott tube, diabetes, the sympathetic control of the peripheral vessels, sulphonamides, urinary infections, influenza, hypertension, nephrosis, and riboflavin deficiency. Of these, the articles on the use of the Miller-Abbott tube in the diagnosis and treatment of disorders of the gastro-intestinal tract by Osler Abbott, and on modern conceptions of arterial hypertension by Page and Corcoran, will be the most welcome to British readers. For they are by master hands and they deal with subjects in which the Americans have gone further than we, largely owing to the circumstances of the war. It was in 1909, apparently, that Scheltema, "observing one of his barnyard fowl labouring to complete the ingestion of a piece of string, the first portion of which had already traversed the gut and reappeared astern," successfully attempted the same feat on a child by means of a rubber tube. From this has developed a technique which is of great value in the diagnosis and treatment of obstruction of the small intestine and the proximal colon, and of which more would have been heard in this country had not our embryo Hunterian professors and Goulstonian lecturers been preoccupied with other affairs of State. It must be admitted, too, that the subject of hypertension is one that the Americans, both North and South, have made their own. Page and Corcoran review the whole subject of experimental hypertension in animals, the tests designed to measure vascular reactivity in man, and treatment by operation, by thiocyanate, and by kidney extract. The field is full of promise, but there is still much spade-work to be done.

FIRST AID TO DIAGNOSIS

Symptom Diagnosis: Regional and General. By Wallace Mason Yater, M.D., M.S. Fourth edition. (Pp. 900. 50s. cloth.) New York and London: D. Appleton-Century Company. 1942.

When a textbook, which is introduced with the specific statement that "there is nothing original in the material" but only its arrangement, reaches its fourth edition it has clearly justified itself. *Symptom Diagnosis* was originally compiled (and that is the correct term) by the late Dr. Wilfred M. Barton and Prof. W. M. Yater, and has now been carefully revised by the latter. It is not designed for study but for quick reference; not for the library but for the desk. The authors expressed a threefold purpose: (1) to aid the busy practitioner in diagnosis by allowing him quickly to reduce the number of possibilities; (2) to prevent the overlooking of important considerations; and (3) to focus attention on the characteristic symptoms of disease. Properly used, no doubt such a method may be helpful, though naturally it does not fulfil the role of a textbook of medicine. Each symptom is adequately described; then follow those diseases in which the symptom is a prominent or constant finding, in order of importance. This is followed by a list of the chief signs and symptoms of each disease mentioned, or a reference is given to a page on which they may be found. Laboratory findings are not included, as the volume is designed merely as a first aid to diagnosis. This laborious task appears to have been painstakingly and competently carried through, and the book will doubtless continue to give help to those minds that work along these lines.

REGIONAL ANALGESIA FOR ABDOMINAL OPERATIONS

Regional Analgesia for Intra-abdominal Surgery: With Special Reference to Amethocaine Hydrochloride. By Norman R. James, L.R.C.P.&S.Ed., D.A. (Pp. 57; illustrated. 6s.) London: J. and A. Churchill. 1943.

There is some evidence that local, regional, and spinal anaesthesia are becoming rather more popular in this country—there are certainly so many cases in which their use has indisputable advantages that the technique of administration should be of interest to every surgeon and anaesthetist. Under the title *Regional Analgesia for Intra-abdominal Surgery* Mr. Norman James has produced a booklet with the essentials concentrated into 57 pages. While many different agents can be successfully used in this way, the author's preference is for amethocaine hydrochloride, which he claims gives a profound analgesia and relaxation of at least three hours' duration without toxic effects. As in the case of many other anaesthetic agents, there are unfortunately several synonyms for this product—pantocain, butethanol, decicain, pontocaine, dikain, etc. For the sake of safety one would like to see legislation to compel uniformity of nomenclature in these matters.

The injection of the analgesic solution, in strengths of 1/1,000 and 1/2,000, is preceded by an intravenous administration of omnopon in sufficient dosage to produce "a light state of narcosis," in place of the more usual barbiturates. The technique advocated for the thoracic nerve block and the subsequent posterior splanchnic block is the orthodox one which has been widely tested and almost universally adopted as satisfactory. Certain modifications are described for use in special operations—e.g., cholecystectomy, nephrectomy, gynaecological operations, etc.—and several good photographs amply illustrate the technical details.

Although short, this book will give the novice enough information to enable him to start his experience of this interesting and important branch of anaesthesia.

Notes on Books

A Tropical Medical Manual, by Dr. PERCY E. TURNER, was prepared for the use of Salvation Army officers, and a third edition is published at 3s. 6d. from International Headquarters, 101, Queen Victoria Street, E.C.4. This little handbook gives useful hints for lay persons called upon to care for themselves or others in tropical climates when stationed far from a doctor or a hospital. The first part deals with general hygiene and simple preventive measures against disease and insect pests; a chart of physical exercises for the maintenance of fitness is included. The second section describes simply but adequately the more prominent features and treatment of the commoner diseases that may be encountered. The instructions are not meant to replace skilled attention, but should prove valuable to those so situated that they must rely upon their own resources.

A fifth edition of *Fevers and Fever Nursing*, by Miss EVELYN C. PEARCE, sister-tutor at the Middlesex Hospital, which appeared first in 1930, is published by Faber and Faber at 6s. Some alterations have been made and three new charts added to include information on diseases the danger of which is enhanced under war conditions—bacillary dysentery, undulant fever, and glandular fever—and also on the louse-borne infections, which are dealt with in a new chapter. Infective jaundice also forms the subject of a new chapter.

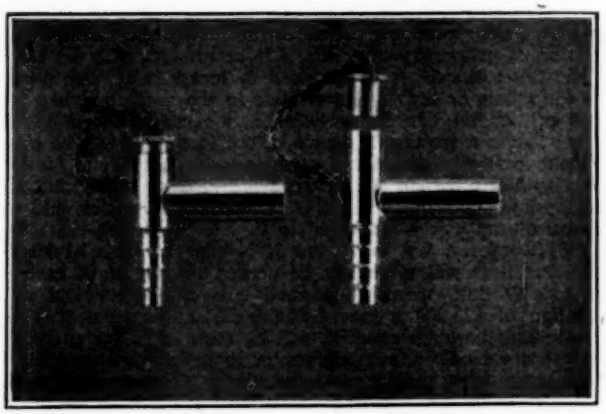
Dr. Julius Bauer's book *Constitution and Disease*, mentioned in our leading article entitled "The Constitutional Factor" on April 24, will be issued in this country during June by Heinemann Medical Books Ltd. at 21s.

Preparations and Appliances

A SUCTION ENDOTRACHEAL UNION

Dr. W. A. COBB, D.A. (Hurstwood Park Hospital), writes:

During endotracheal anaesthesia it not infrequently happens that mucus enters the tube and causes more or less embarrassment to respiration, the degree of which may be out of all proportion to the amount of mucus present, increasingly so



with smaller sizes of tube. This factor may not be of much importance in short operations, but in the longer ones, and, in particular, intracranial and thoracic, it is of real significance. Much can be done, by proper timing and dosage of the preoperative atropine or scopolamine, to reduce the secretion of mucus, but when for any reason this fails recourse must be had to endotracheal suction.

An endotracheal union, through which a suction catheter can be passed, is available, but is so cumbersome that it is only likely to be used when its need has been expected. My object has, therefore, been to make a union differing so little from the normal that its use could be routine, and suction could be applied to any case should the need arise.

The union is a modification of Rowbotham's pattern and is made in sizes 2, 3, and 4; size 1 is too small to allow the passage of a catheter. The vertical limb has been carried upward about 1/4 in. beyond its junction with the horizontal limb, and its upper end closed with a small metal stopper, attached to the union by a short length of chain. At any time during the operation this stopper can be removed and a rubber—or, if preferred, gum-elastic—catheter can be passed, and suction applied. Size 2 will take a No. 6 catheter, and Sizes 3 and 4 a No. 9. These three sizes of union can be used for all anaesthetics where an equivalent size Magill or Rowbotham union would normally be used. A further advantage is the greater ease of cleansing, owing to the absence of blind corners.

The unions have been made for me by Medical & Industrial Equipment Ltd., 12, New Cavendish Street, London, W.1. The photograph reproduced is about half natural size.

PELVIC BINDER

Dr. PAUL F. MCGOEY (Canadian Orthopaedic Unit) writes:

This simple type of pelvic binder has been designed for use during examination and treatment of orthopaedic patients. It is small yet adequate. The material is towel cloth, and the string is standard orthopaedic cord (No. 6). Approximately one square foot of cloth and seven or eight feet of cord are required. The binder is easy to make, inexpensive, compact, readily laundered, and fits snugly and comfortably. It is tied with a single knot, does not impair movement, gives satisfactory exposure, can be applied over trousers, and is easy to remove from beneath plasters.

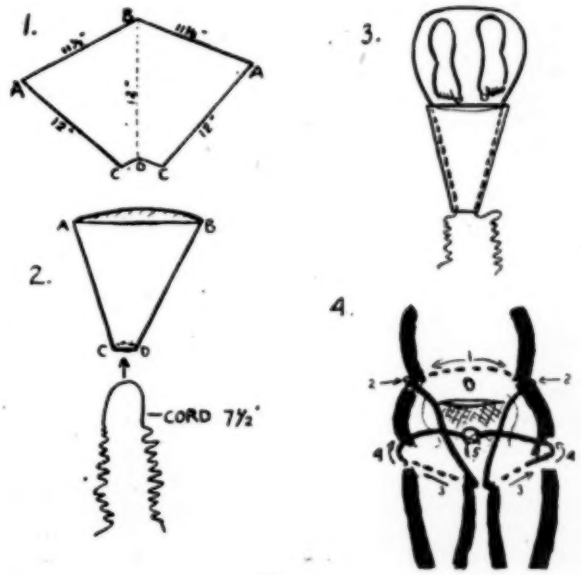


FIG. 1

The index to the diagram (Fig. 1) is as follows:

1. "Kite-shaped" pattern. Fold along line BD; sew AC to AC; leave AB and CD open so as to form a funnel-shaped bag as in diagram 2.
2. Insert hand into top open end (AB) of funnel, and draw through a loop of the cord sufficient to encircle patient.
3. Illustrates position of patient.
4. Binder in place: (1) Centre point of cord corresponds to midline posteriorly; (2) cord runs along the top of iliac crest and down through "funnel"; (3) cords emerge and encircle the buttocks in the gluteal folds; (4) cords pass around the hips; (5) single knot is tied in front of binder; technique of application can be modified to suit various positions of patients.

FIG. 2

I am indebted to Matron A. B. Hunter and Dr. L. M. Hampson for help in the preparation of this description.

Nova et Vetera

THE FIRST MEDICAL BULLETIN

Dr. C. E. Lakin, in his annual oration to the Medical Society of London on May 10, traced the first medical bulletin very far back in the world's history. The bulletin was an oral one, given, like Mussolini's pronouncements, from the window of a Roman palace; its author was a woman, and it was false. The wife of Tarquinius Priscus, the fifth of the early kings of Rome, had a female slave who gave birth to a son, and as there were flames around his head and other supernatural manifestations, the queen adopted him, and on reaching manhood he, Servius Tullius, married the king's daughter. The sons of the former king, Ancus Martius, whom Tarquinius had supplanted, resolved to seize the crown, and hired two shepherds to assassinate Tarquinius in his palace, which they did. Thereupon the queen ordered the palace to be closed, caused the shepherds to be arrested before they could escape, bade her adopted son Servius Tullius play the man, and herself went to the open window and declared to the Roman citizens that the king had only been stunned by a blow, that the weapon had not penetrated deeply, that the wound had been examined and the blood wiped away, that the symptoms were favourable, and that, the king having recovered consciousness, he desired that Servius should act for him until he was fully restored. By this clever bulletin, false though it was, she defeated the designs of her enemies, who, hearing that there was every prospect of the king's recovery, fled from the city, and by the time the king's death could no longer be concealed Servius was in unquestioned authority. The word "bulletin" in such a connexion is, of course, a comparatively modern use. Meaning an official statement as to the health of an invalid, it appears to date from 1765, when Horace Walpole wrote from Paris that the Dauphin (the son of Louis XV) was at the point of death. "Every morning the physicians frame an account of him, and happy is he or she who can produce a copy of this lie, called a 'bulletin.'"

MEIGS'S SYNDROME

Recently there have been a number of case reports of a syndrome comprising the combination of ovarian fibromata, ascites, and hydrothorax. The condition was first fully described by Dr. J. V. Meigs of Boston, and the syndrome has become known by his name.

Lawson Tait's Case

It is the purpose of this note to make more generally known another example of this syndrome described by Lawson Tait (*Trans. med.-chir. Soc.*, 1892, 75, 109). The article is entitled "On the Occurrence of Pleural Effusion in Association with Disease of the Abdomen"; it has not been mentioned in any of the recent literature. There is first described a typical malignant case with ascites and pleural effusions from secondary deposits. His second case, by contrast, is of the non-malignant condition.

The patient was a lady of 36 years whose abdomen was noted to be becoming larger in June, 1889. This steadily increased—very rapidly during Dec., 1889. In Jan., 1890, there were an evident left hydrothorax and all the signs of ascites; on deep pressure through the fluid a large rounded solid tumour could be felt, apparently moored in the pelvis and floating freely in the ascitic fluid. Ninety-five ounces of blood-stained fluid was removed from the left pleural cavity, and a few days later fluid was found and aspirated from the right pleural sac; it too was blood-stained. It was thought that there was a malignant tumour in the abdomen with secondary deposits on the pleural surfaces, and she was sent home to die.

A fortnight after her return home her left pleural sac was again tapped, and 80 oz. of pale yellow fluid was removed. In Feb., 1890, the abdomen was tapped and 11 quarts of pale yellow thin ascitic fluid was removed. From this time until Feb., 1891, her abdomen was tapped over 30 times, from 8 to 14 quarts of clear yellow fluid being removed. The pleural effusions did not recur.

The patient was readmitted to hospital in March, 1891. On opening the abdomen a large quantity of ascitic fluid escaped. The tumour was found to be a large solid growth of the right ovary; on removal it weighed 2 lb. 2 oz., and was found microscopically to be a fibroma. Recovery was complete.

Lawson Tait remarks: "The lesson in this case is in my opinion a very valuable indication that no set of conditions in the abdomen, however apparently unfavourable, are sufficient to justify us in an absolutely unfavourable condemnation in any particular case."

Newcastle-upon-Tyne. R. B. THOMPSON, M.B., M.R.C.P.

THE STATUS OF THE NURSE

Lord Addison presided over a luncheon given under the auspices of the Professional Nurses and Midwives Conference, when the principal speaker was Lord Horder. In a general reference to post-war planning, Lord Horder said that his slogan was "Do it now," and this should apply to an endeavour on the part of the medical profession to raise the status of their nursing colleagues and to make the vocation of nursing economically attractive to girls of the type who were particularly suitable to exercise it. If girls could receive efficient training and the opportunity to pursue a profession which carried its proper prestige and afforded economic security for the future, something would have been achieved without waiting until "after the war." Paper planning was all very well, but were they not sometimes, Lord Horder asked, "more planned against than planning"? The State-registered nurse was the centre of the situation. Her career should be freed from embarrassment and obscurantism by making it perfectly clear to the public what distinct status was implied by the hall-mark of the State certificate. He suggested that there should be a roll of assistant nurses, and that in future no one should be able to pose as a nurse who was not either a State-registered nurse or enrolled as an assistant or student nurse. There were certain small special groups of nurses who did not come within either of these categories, and their particular cases must be considered. Dr. Haden Guest, M.P., in thanking Lord Horder for his speech, while confessing that he himself could not see beyond the armistice, suggested the greatness of the field which would await both the medical and the nursing services immediately after the war.

SALARIES OF NURSES IN SCOTLAND

The Scottish Nurses' Salaries Committee, of which Prof. T. M. Taylor is chairman, has issued a second report. This reprints much of the earlier one, now to be regarded as superseded (*Journal*, Feb. 27, p. 264), and recommends maximum salaries for matrons and sister-tutors (omitted from the first report) and salaries for all other nursing personnel except those in mental hospitals and public assistance institutions, and assistant nurses. The salaries recommended in the earlier report—namely, £40 in the first year of training, rising to £70 in the fourth year, when the student becomes State-registered, and £100 to £120 a year for staff nurses, and £130 to £200 a year for ward sisters—form the basis for those now suggested for nurses in other than general hospitals. In approved general training schools the salaries of matrons will be from £250 to £700 a year according to the size of the hospital, and of assistant matrons from £200 to £400. In general hospitals which are not training schools the salaries will be from £200 to £325 for assistant matrons and from £200 to £525 for matrons. Similar salaries with minor differences will apply in fever and sick children's hospitals. As an incentive to nurses to come forward for tuberculosis institutions the committee recommends salaries £5 or £10 higher than elsewhere. Salaries in maternity hospitals, too, are to be £20 higher, the additional sum being payable for the extra midwifery qualifications. These salaries are to be regarded not as minimum but as standard national scales applicable to the whole of Scotland, and should come into operation as from April 1 last.

MASS RADIOGRAPHY IN LONDON

The London County Council expects delivery in the near future of one of the transportable mass miniature radiography units for early detection of pulmonary tuberculosis in accordance with the Minister of Health's scheme. It is proposed to locate it at four places in turn—hospitals or health centres—two in the north and two in the south of London. In the early stages the use of the unit will be limited to the more urgent demands, but in time it will be possible to make extensive systematic examinations of selected groups of persons. The officer in charge will work in close collaboration with the borough tuberculosis officers. The cost of the staff and maintenance of the unit is estimated to be £2,100 for the year 1943–4, and £3,020 for a full year, and it is expected that at least 100 additional beds will ultimately be needed in respect of each mass radiography unit, involving a total expenditure for bed accommodation of £23,000 a year. The L.C.C., in agreement with the metropolitan borough councils, will be responsible for carrying out the assessment of proposed allowances to patients who are found to be suffering from pulmonary tuberculosis. The machinery of the tuberculosis dispensary will be utilized to the greatest possible degree in connexion with the inquiries, and the actual giving of financial assistance will be made through the dispensary organization.

"Operative" dental treatment—i.e., extractions, fillings, and gum treatment—is to be provided at all the larger Royal Ordnance factories. A charge of 2s. 6d. will be made for each visit irrespective of its duration, but the dentist will see workers only on the recommendation of the medical officer.

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SLOW UNION OF FRACTURES

During the past year or so there has been more than one reference to the impression held by many that fractures are taking longer to unite than formerly. If this were true it would, under present conditions, be a matter for serious concern, for fractures exert a drain upon man-power both in industry and in the Services. Of greater concern is the quality of the functional recovery that fracture cases now show by comparison with those of former days, whether or not the rate of union is slower. About this we have as yet no satisfactory statistical evidence. So many of the statements on these matters are based upon impressions rather than upon facts that one hopes that many more statistical inquiries of the kind reported by Watson-Jones and Coltart[1] will be made available. These writers have investigated the rate of union in 804 fractures of the tibia and femur treated in the Royal Air Force and at the Liverpool Royal Infirmary, though not all of the cases were treated throughout by the surgeons of either.

A clear distinction must be drawn between the biological process of fracture healing and the modifications in this due to the methods of treatment used. There is little evidence that the biological conditions are any different now from those of thirty years ago. As there is little complaint about fractures other than those of the femur and tibia, the problem would seem to be a local one, which would hardly be so were there in existence any widespread dietetic or other biochemical error. Burns[2] thinks that the delaying factors came into force suddenly some years before the war—in fact in 1930—and naturally there has been a tendency to interpret this as being the result of a sudden change in methods of treatment. Skeletal traction and unpadded plaster splints are suspect. The introduction of the former goes back at least twenty years further to Codavilla and Steinmann. Although Hey Groves,[3] who did so much for the advancement of the technique of fracture treatment, was using skeletal traction in 1916, nevertheless it would seem still to have been somewhat of a novelty in London in the 1920's. The year 1930 coincides with the great wave of enthusiasm for pin traction and unpadded plasters popularized by Böhler in his book published the year before. In spite of this it would be very wrong to blame the great Viennese surgeon, whose writings and methods have been plagiarized by so many of us. What also happened about 1930 in this country was a reawakening of surgical conscience about the treatment of fractures—an awakening which the investigations of various committees, leading up to a recent British Orthopaedic Association memorandum,[4] show still not to be complete. There is no doubt that since 1930 there has been a more critical evaluation of results occasioned by the setting up of fracture clinics prepared to deal with the problem in a very thorough manner. Such critical study has meant that the standards of union have come more and more to be based upon radiological rather than clinical evidence. Furthermore, recovery has been regarded in terms not of the patient's discharge from hospital but of his ability to return to normal occupation. Such considerations indicate how difficult it is to compare the time factors and results of to-day with those of thirty years ago.

Watson-Jones and Coltart quote writings from this *Journal* of 1912 by Robert Jones[5] and others to support their strongly held view that uncomplicated fractures treated by simple manipulation and plaster are uniting as quickly to-day as in former years. The factors causing delay are interrupted immobilization, traction and distraction, infection, persistent angulation, too early weight-bearing, and loss of blood supply. In skilled hands operative reduction does not cause delay. The decision to use this method for unstable fractures should be made early rather than as a last resort. These writers state that the greater use of skeletal traction accounts for the recent increase in the frequency of slow union. Statistically we doubt the justification for this conclusion on the evidence that they have put forward; in fact it rather seems to be guesswork, for they have compared cases treated in this way only with others treated concurrently by different methods which cannot justify a comparison dependent on time. Whereas their figures, though small, indicate the very real danger of distraction, yet we are inclined to quarrel with the writers in condemning traction. Their figure of 32 out of 199 fractures of the tibia treated by traction is altogether too small for any satisfactory deduction to be drawn therefrom. And the figures for cases treated by traction show only a moderate definite trend as compared, for example, with the very much clearer trend, though in a smaller group, of cases treated by frank distraction. The figures for distracted fractures are certainly the worst. Presumably many of them were cases of special difficulty. The measure of such possible difficulty has not been adequately considered, nor is there any estimate throughout the work of the influences of age, type of patient, or quality of the surgical team controlling treatment. We suspect that some of the poor results may be related to this last factor, and that many of the bad results in fracture treatment are the consequence of bad fracture treatment. The lack of evidence in the report in relation to age and condition of patients is open to criticism, as it is apparent that the 804 fractures studied were only partially in one homogeneous group—namely, those in the Royal Air Force, and the number of these is not given. Nevertheless, the weight of evidence of Watson-Jones and Coltart is impressive. It agrees with the conclusions of A. W. Allen[6] that "the incidence of delayed and non-union appears to be less than is ordinarily supposed." In the same treatise Parsons and Wilson report the incidence of delayed union of the tibia in 61 cases treated by skeletal and adhesive traction to be 20%. The total number of fractures treated by all methods was 114.

It is worth noting that the bad results of fractures were exercising the minds of surgeons as long ago as 1912. A Fracture Committee of the B.M.A.[7] was sitting then, as in 1938. In 1912 it was not so much a question of slow union as of mal-union. It will surprise most people to read that of 3,000 fractures investigated no less than 42%, or 1,276 fractures, suffered from mal-union, of which 896 had bad function (i.e., 30% of the total). Even in the anatomically good results (1,736 fractures, or 58%) there were 160 cases with bad function. Of 3,000 fractures, therefore, the functional bad results numbered 1,056, or 35%. Hey Groves, discussing these figures in 1916, said: "They form a mine of information and an authoritative standard by which all subsequent fracture work can be

1 *Brit. J. Surg.*, 1943, **30**, 260.
2 *Lancet*, 1942, **2**, 299.
3 Hey Groves, *The Modern Treatment of Fractures*, 1916 (first edition), Bristol.
4 "Accident Services," B.O.A. Memorandum, *Lancet*, 1943, **1**, 409.
5 *British Medical Journal*, 1912, **2**, 1589.
6 *The Management of Fractures*. Edited by P. D. Wilson. 1938, Lippincott, Philadelphia.
7 Fracture Committee Report, *British Medical Journal*, 1912, **2**, 1505.

measured and with which it can be compared." When more is known about the functional results of a similar present-day group of fractures we shall be in a position to judge how valuable modern methods are. It is to be hoped that further statistical inquiries will be made: it would not be surprising to find emerging from such an inquiry the fact that it is often the grosser errors of treatment and the faulty application of principles that in uncomplicated cases are the causes of slow union, mal-union, and poor functional recovery.

"IN THE DISCARD"

Just over two months ago a statement by the Secretary of the B.M.A. about the consultations to take place between the Government and the medical profession was published in this *Journal* (March 20, p. 359). It was said that an undertaking had been given that discussions would proceed not on the basis of any preconceived plan of the Minister's, but "from the ground." The meaning of this rather obscure phrase is now becoming clear. The Representative Committee during its brief two months of existence has met several times both as a committee and in discussion with the Ministry of Health. Quite recently it had placed before it a memorandum from the Ministry which made it plain just how far off the ground the Ministerial plan had got. Owing to an indiscretion on the part of someone who had attended the discussions, the lay press got an inkling of the Ministerial plan. The disclosure of one item in this made it impossible to continue concealing the rest. At a largely attended meeting of the Metropolitan Counties Branch on May 16 Dr. Charles Hill, the Deputy Secretary of the B.M.A., in a vigorous and well-marshalled speech, told the audience of the substance of the exchanges of views between the Representative Committee and the Ministry of Health. Those who did not read the account of the meeting in our *Supplement* for May 22 would be well advised to refer once more to last week's *Journal*. The suggestions that have been put forward are, of course, non-committal—that is to say, the Government is not committed to take any action on them. But they are committal in the sense that they show clearly the direction in which the Ministerial mind is moving and its conception of what should happen to the profession of medicine in this country. Put briefly and bluntly it is this, that medical men should cease to exist as freely practising doctors and should become instead whole-time employees of local authorities. If this happens, then doctors will no longer constitute an independent, learned, and liberal profession, but will instead form a service of technicians controlled by central bureaucrats and by local men and women entirely ignorant of medical matters.

As was to be expected, the Minister has rejected the idea that medicine should be administered by a corporate body. A special compartment of the present Ministry would be set up to run the show, with the Minister—a political figure with a high degree of insecurity of tenure—responsible to Parliament for the health policy of the nation. Professional advice at the centre would be secured by a Medical Service Council, three-quarters of whose members would be nominated by the profession. This would be a statutory body with the right to make public its recommendations and proposals and to issue reports. A Central Medical Board would have executive authority over domestic matters, and would act as an appointments bureau for the whole-time State salaried domiciliary service. At the periphery local authorities, for health purposes, would be grouped by means of joint boards. General practice would be based on health centres staffed by, say, a dozen doctors working on a whole-time, salaried, pensionable basis with no right to treat private patients outside the service: men who had been in practice for a given time before the beginning of the scheme could exercise an option for part-time service in it. Practitioners newly qualified would have no such option, but would be compelled either to enter the service on the whole-time basis or stay out of it. Compensation for loss of practice would be paid. After qualification and preliminary house-officer experience the doctor would enter the service at a salary of £400 a year, at which rate he would remain for three years, thereafter rising by yearly increments of £30 to a salary of £1,200 a year. Thus a man who qualifies at the age of 24 would not ordinarily be earning £1,200 a year until he is 46. The proposals for a consultant service are as yet vague, but the appointment of consultants and specialists would be by the local authority, and would be whole-time or part-time "according to circumstances."

The Representative Committee faced these proposals with dismay—dismay that the Government Department officially connected with health should treat the much-vaunted comprehensive medical service in such a parochial manner. The absurd anomalies of splitting up health functions among different Government Departments is, for example, to remain, and the mental health services are excluded altogether from the scheme. Locally, confusion is added to confusion. The joint boards to be set up are to be responsible only for some of the local health services—for domiciliary practice and certain hospital services. The health of the school child will be looked after by the local education authority. Rural, urban, and county borough councils will share responsibility for environmental hygiene. The possibility of unifying the administration of health services both centrally and locally is ignored.

As Dr. Hill said on May 16, "Why the hurry?" It appears to many that political expediency has dictated the hurried—and, from the profession's point of view, ill-considered—moves that have been made by the Ministry of Health, as a direct outcome of the Beveridge report. The least politically dangerous move would be to act upon Sir William's Assumption B. Is this an attempt of the Government to win quick popularity with an impatient electorate by saying: "We have nationalized the doctors, and so given effect to Assumption B"? Has the Minister not noticed that the word "comprehensive" appears before "health service"? It is more than probable that immediately this war is finished the public, especially those returning to civilian life, will take a lively interest in Assumptions A and C. If, under continued pressure of public opinion, the Government then finds itself compelled to give that security against loss of income which is at the basis of the Beveridge proposals, it will naturally have to keep a sharp eye on the amount of money going out of the Social Security Fund. An important item in this would be medical certification. It almost looks as though the Government wishes to gain absolute control of the general practitioner for at least one purpose—strict supervision of certification by the doctors. It is not surprising, therefore, that the Representative Committee informed the Minister and the Joint Parliamentary Under-Secretary representing the Secretary of State for Scotland on May 17 that further discussion on the basis of the Ministry's proposals would be unfruitful. Faced with the suggestion that a Royal Commission be set up to consider the whole question, the Minister agreed to withdraw the proposals, and observed that he was not bound to any time-table in the issue of a White Paper. He agreed to a re-examination of the whole position, and to look upon the proposals outlined above as "in the discard." This, we understand, is

a term used in the game of poker. It is well to remember that cards in the discard are re-shuffled and find their way back into subsequent games.

CEREBRAL REACTIONS TO ANTISYPHILITIC THERAPY

Severe cerebral reactions during antisyphilitic therapy are fortunately rare but have a high fatality rate. Of these reactions the most important is so-called "haemorrhagic encephalitis." The name is not a good one, as the condition is mainly not inflammatory but rather one of increased permeability of the capillaries; in this it has features in common with purpura. Causation is unknown, but most observers agree that it is the toxic action of arsphenamine derivatives on the smaller blood vessels of the brain and possibly allergic in nature. Others consider that syphilis itself is the cause, but this is to some extent negatived by the observation that the condition has been recorded in other diseases treated with these drugs. Symptoms usually come on rapidly after the second or third injection, and are characterized by nervous irritability, headache, epileptiform convulsions, and unconsciousness. Treatment is likely to be successful only if energetic and undertaken without delay: venesection, repeated spinal fluid drainage, and injections of adrenaline are indicated—the last-named is probably the most important, and injection should be repeated as often as once every hour. The pathological features are congestion of the brain, with multiple haemorrhages and in some cases areas of necrosis. An increased protein content of the cerebrospinal fluid has been described, but otherwise the fluid is usually normal.

Two articles elsewhere in this issue record more or less typical cases. Halcrow describes a case which might be a textbook picture. He considers the cause to be a toxic action of the benzol radical on the capillaries and advocates the use of the term "haemorrhagic encephalopathy." Nelson and his colleagues describe 4 cases, 3 of them pregnant women, only one of whom recovered. They also regard the condition as due to a toxic action on the capillaries, but consider that syphilis itself cannot be excluded and that in pregnant cases toxaemia of pregnancy may be an additional factor. Thomas *et al.*[1] have reported 8 cases, 2 fatal, out of a series of 764 treated with massive dosage of mapharsen. It is generally agreed that haemorrhagic encephalitis occurs more frequently with intensive therapy than with the more time-honoured methods, but the fact that in the latter the condition usually comes on very early in treatment suggests that it is due to idiosyncrasy rather than to heavy dosage. Courville and Marsh[2] record 12 cases, in 7 of which multiple symmetrical foci of haemorrhagic necrosis were found and in one a gross haemorrhage into the brain; they regard the condition as due to a peculiar susceptibility to arsphenamine of certain blood vessels of the brain. In a case described by Lichtenstein[3] the parenchyma of the spinal cord was mainly affected—in fact a demyelinization. He regards the condition as due to sensitivity of the nerve tissues or the vascular bed to the arsenic. The demyelinization may be the result of vascular changes, but the author regards it as a direct poisoning of the nerves by the drug. This case appears to be in a different category from those already quoted.

Haemorrhagic encephalitis is fortunately very rare, occurring only once in some thousands of cases; all are agreed that it cannot be foreseen or provided against and that it may follow relatively small doses of arsenicals. Certain blood vessels of the brain appear to be susceptible to the toxic action of the drug, some individuals showing a particular idiosyncrasy. The walls of the capillaries give way, leading to haemorrhage and perhaps necrosis. The symmetrical distribution of the lesions bears out this theory. It is of interest to note that mapharsen, which is claimed to be generally so much less toxic than most of the arsphenamines, appears to be unduly so as regards this condition.

1 *Amer. J. Syph. Gon. V.D.*, 1942, **26**, 529.
2 *Arch. Derm. Syph.*, 1942, **48**, 312.
3 *Arch. Neurol. Psychiat.*, Chicago, 1942, **48**, 740.

DIET AND TRINITROTOLUENE POISONING

The relation of diet to the manifestations of T.N.T. poisoning in human beings has not hitherto received close attention. If the results of animal experiments can be translated in terms of human reaction, some investigations recently carried out by Himsworth and Glynn[1] may make a most important contribution to the prophylaxis of T.N.T. poisoning in munition workers. In any case, they shed much light on the mode and site of action of T.N.T. in producing its well-known toxic effects. The development of toxic symptoms in rats after the administration of T.N.T. appears to depend to a remarkable degree on the nature of their diet: a high-fat diet is accompanied by severe symptoms and pathological lesions, while with a high-carbohydrate or high-protein diet these ill effects are slight or absent. The two most striking manifestations of T.N.T. poisoning in human beings—cyanosis and toxic jaundice—are not of course reproducible in rats, while the aplastic anaemia which has accounted for a certain number of deaths in T.N.T. workers is modified in rats into a severe erythroblastic hyperplasia of the bone-marrow. But lesions of the liver, comparable to those found in human cases of toxic jaundice, and the excretion of T.N.T. derivatives in the urine, point to a fairly close parallelism in the toxic process in both species. The "fat" diet on which the complete picture of chronic T.N.T. poisoning alone developed contained 50% of fat in the basic mixture, while the "protein" contained 60% of casein and the "carbohydrate" 90% of wheatmeal bread. The first and most striking manifestation of the toxic process was the appearance of a bright red pigment in the urine within half an hour of administration of T.N.T. mixed with the food. The composition of this pigment and its relation to the colourless pigment giving the Webster test in the urine of T.N.T. workers are uncertain, but the fact that it was absent from the urine of one animal with severe liver damage, just as the Webster test becomes negative when T.N.T. jaundice develops, suggests that the red pigment and the Webster chromogen may have a similar significance. The dependence of the appearance of the red pigment on the nature of the diet was shown by its specially prolonged excretion by rats on the fat diet. With very small doses of T.N.T. (0.01 g. per kilo body weight) none was excreted by rats on the fat or carbohydrate diet but a trace by those on the protein diet—a fact explained possibly by the diuresis always present on this diet and the consequent washing out of the pigment before it can be changed into a colourless compound. It is suggested that the pigment is formed at an early stage in the disposal by the body of T.N.T., and represents a dosage larger than the body can deal with.

The remaining features of chronic T.N.T. poisoning in rats are loss of weight, increased appetite, changes in the blood picture, hepatic lesions, and loss of hair. Loss of weight, in spite of a higher total food intake, was characteristic only of the rats on the fat diet, and, from experimental exclusion of other possible explanations, it is concluded that the fat diet in some way influences the animal's metabolism so that its ability to dispose of the T.N.T. within

1 *Clin. Sci.*, 1942, **4**, 421.

its tissues is impeded. The changes in the blood picture —a fall in the haemoglobin content, the appearance of normoblasts, reticulocytes, and polychromatic cells, and an increase in polymorphonuclear cells—were also more conspicuous in rats on the fat diet, while liver lesions were found only in these rats. The liver changes ranged from fatty infiltration to acute necrosis of the parenchymal cells. The severity of the lesion bore no relation to the amount of T.N.T. given, but a preliminary period of feeding on the fat diet appeared to predispose to the development of the more severe disturbances. Certain peculiar features of the incidence of hepatic damage similar to those in the incidence of toxic jaundice in T.N.T. workers were observed. Thus, there was a latent period between the administration of T.N.T. and the appearance of liver changes, and only very slight lesions occurred in rats surviving 30 days.

It has already been suggested by Voegltin, Hooper, and Johnson that the absence of cases of severe T.N.T. poisoning among workers in a factory studied by them might be due to the good quality of the diet provided. The results of this investigation appear to point to the same conclusion, with the corollary that a diet in which fat preponderates to a great extent is not to be regarded as one of "good quality."

HEALTH EDUCATION FOR GIRLS

One of the first results of the publication of *Our Towns*, on which we commented in a leading article on May 8, has been to direct closer attention of those responsible for or interested in youth organizations to the training they give in hygiene and healthy living. The National Association of Girls' Training Corps in its leaflet No. 6 already provides for a course of lectures in hygiene, the first three of which, to be given by a doctor, are concerned with (*a*) the body and its functions: minor ailments; (*b*) the skin and its functions: common skin troubles; and (*c*) general questions about the maintenance of good health. Dr. Sarah Roberts of Bedford has sent us a copy of her own scheme of lectures in social hygiene for girls from 16 to 18. The lectures fall easily into three groups. First comes personal hygiene, which covers roughly the same ground as the first three lectures of the Girls' Training Corps. Then there come two excellent groups of lectures on public hygiene and social hygiene. Dr. Roberts says that there is more chance of women using the public health services if they learn the "whys and wherefores" when they are young. She therefore explains the functions of maternity and child welfare clinics, nurseries, and school clinics, and discusses the work of district nurses, health visitors, and welfare workers. Immunization and vaccination, milk- and water-borne diseases, fumigation and sanitation, and institutional provision are other subjects in this section, the object of which is to bring home to the girls the value of and the reason for all these social services. In the lectures on social hygiene Dr. Roberts deals first with family life, particularly with the position of the mother as the hub of that circle. The mother should, she holds, have at least an elementary knowledge of the child's mind and body from childhood to maturity if she is to understand children at all. Next comes development, which includes anatomy, and discussions on puberty, adolescence, maturity, etc., followed by talks on pregnancy and childbirth. The final subject is hygiene of the community, including healthy living to produce healthy children, venereal diseases, tuberculosis, etc. Dr. Roberts says it is her aim to impart some worldly knowledge to these girls which will be of use to them through life and help to reawaken a more urgent sense of social responsibility. She advises simple language, using as few medical terms as possible, and has found the girls interested and orderly. She concludes with the suggestion that a course of this kind might be included in the syllabus for day continuation schools.

HYPOGLYCAEMIA AND THE BRAIN

Histological study of the brain in six fatal cases of hypoglycaemic coma by R. D. Lawrence, A. Meyer, and S. Nevin[1] has led them to conclude that a process akin to anoxia is concerned in this condition. Three of their cases were in diabetics and two in schizophrenics—all receiving insulin treatment—while in the sixth there was an adenoma of the pancreatic islets. Though there was some difficulty in estimating the duration and intensity of coma in these cases, the condition seems to have lasted for periods varying from three-quarters of an hour to 17 days. The histological changes differed somewhat in accordance with this variation. In cases in which coma had persisted for 36 hours or longer the cerebral cortex had undergone necrosis in many areas, with disappearance of numerous nerve cells. Selective involvement of the outer or inner laminae composed of these cells was particularly noted, also involvement of parts of Ammon's horn, an area known from Spielmeyer's work to be particularly liable to ischaemia. The corpus striatum and, to a less extent, the cerebellum were also affected, but the brain stem tended to be spared. There was widespread degeneration of neurones that had escaped complete destruction. Where coma had been of shorter duration earlier stages of the degeneration were present. These observations agree with certain others previously described both in hypoglycaemic coma and in conditions known to be of an anoxic character. An outstanding difficulty in the past has been to decide whether the basis of the disturbance may be primarily vascular, or whether there is a more direct action upon the neurones. Lawrence and his co-workers point out that in depriving the neurones of the glucose which forms the sole substrate for their oxidative processes a suspension of activity leading to degeneration and necrosis is entailed. Anoxia is not, strictly speaking, a correct term for this, and they therefore suggest a new word—oxyachrestia.

RESEARCH IN INDUSTRIAL MEDICINE

The Medical Research Council has arranged with the London Hospital for the establishment there of a department for research in industrial medicine. Dr. Donald Hunter, physician to the hospital, has accepted a part-time appointment to the Council's staff as physician-in-charge of the department, and the Council will appoint research assistants to work under his direction. The hospital is providing accommodation and facilities, and will be responsible for the treatment of cases under investigation. The primary purpose of the department is to undertake clinical researches into disorders affecting industrial workers, including both occupational diseases and others of a more general kind. This work will be done mainly in the department itself, but the staff will make visits from time to time to other parts of the country where special problems for investigation may be brought to the notice of the Council. The department will also be responsible for teaching and instruction in the subject. This arrangement supersedes that made last year for the appointment of a whole-time director of research in industrial medicine attached to the Council's headquarters. This post had become vacant through the appointment of Prof. A. W. M. Ellis to the Regius Chair of Medicine at Oxford.

[1] *Quart. J. Med.*, 1942, 11, 181.

MEDICINE AND POLITICS

BY

GEOFFREY BOURNE, M.D., F.R.C.P.

In considering the future of Medicine in this country two separate and distinct issues are involved. One is the question of how adequate health services are to be financed; the other is the question of how they are to be organized and controlled. The former will obviously depend upon the economic state of the country after the war. A considerable extension of State financing will be necessary if and when direct payment out of earnings and voluntary efforts can no longer meet the existing needs or the increasing burden of essential future development. State financing of medical services may then be a duty and a benefit. But *political control* of medical practice and of medical science is another matter, and in my opinion this will always be unconditionally bad.

The Political and the Scientific Outlook

The politician differs from the doctor in training, qualification, and general outlook. The member of Parliament is trained for some activity other than the science of government, or else he is untrained. He is not qualified for his work by any necessary study of finance, economics, or even the technique of reasoning. The emotions of the populace are his guiding light, and it is dangerous for him to defy them. Playing upon the emotions is also the means by which he achieves his political ends. When political axioms are unpleasant or unpopular they may be disregarded or changed. The politician is often ignorant of science, and even if he is aware of the established scientific facts in such cases as diphtheria immunization or pasteurization of milk he is prepared to ignore them in order to avoid antagonizing vocal and ignorant constituents. "This might be the pate of a politician," says Hamlet, "one that could circumvent God."

The doctor, on the other hand, undergoes long, arduous, and intensive training, and his knowledge is thoroughly tested before qualification and practice. He has been taught to weigh evidence before forming conclusions, and knows that failure to act in accordance with scientific truth invites disaster. He learns to respect truth as such, and to value severe and unbiased criticism as a means of arriving at truth. Thus, a fundamental difference exists between political and scientific standards. Political policy is determined chiefly by opportunism and expediency; honest-mindedness and accuracy are essential in science. When scientifically trained individuals engage in politics they are usually forced by circumstances to judge issues by political rather than scientific standards. The science of medicine must never allow itself to be put in a position where its freedom is in the slightest degree curtailed by such political pretexts as the statement that a question of "policy" is involved. Complete freedom of speech, criticism, and medical practice must be retained. Any member of a State service must have the right to speak his mind about his political or professional superiors on any question of medical science, practice, or policy.

Science and Administration

The politician, in so far as he is altruistic, has one supreme aim—administration. To be a good administrator is his ideal. "The Administration," "the Executive," are self-explanatory terms. There is a connotation of supreme central power exercised through successive subservient grades. The politician, by adding "ad," has reversed the word's proper conception. He is fond of this minatory prefix; he adverts, he adheres, he adjures, and he admonishes. Ministration means service. Now, since what is unknown cannot be administered or ministered, the politician regards research as politically non-existent. Moreover, the political or electoral value of future discoveries is *nil*. The public attitude to scientific matters confirms the politician in his idea; for *vox populi vox Dei*. Medical service, to the man in the street, is something which can be "laid on, like gas and water." Politics can often be turned on like gas, but science cannot be turned on like water. Where uninstructed public opinion can directly influence medical organization, as in municipal councils, this blind worship of administration is shown by the fact that seniority in the medical services combines increasing administrative power, diminishing medical opportunities, and more pay.

The public, taught to worship and revere administrators, is prepared to receive their administrations without complaint at any given level of scientific ignorance. In 1920 hypothetical medical bureaucracies might well have stifled the research work which discovered insulin and the liver treatment of pernicious anaemia. In that case the public would have continued to die happily and respectably of these diseases with praises on their lips for the smooth efficiency of their bureaucrats. Medical discoveries are popularly regarded as dropping like ripe plums from trees. Politicians are prepared to exploit them when they do drop, but neither the politicians nor the public realize that a research worker requires adequate laboratories, freedom from interference, a completely fair intellectual field, and adequate remuneration. A scientific doctor has the same needs, and all good doctors try to be scientific. These requirements are not smiled upon by the administrator, for they fall into no preconceived pattern and smack of revolt and insubordination.

History proves that scientific freedom and research are of vastly greater importance to humanity than is administration. This is especially to be stressed because medical science is very young and has far to go. A bureaucratic medical administration may be highly efficient, but if it stifles initiative it will perpetuate the existing death rate of many diseases. Professional freedom, on the other hand, given the right atmosphere and opportunity, will reduce these death rates even if the administration is less good. Therefore, in terms of human lives, there is no doubt that the scientist is more valuable than the administrator. Innovators of all kinds are attacked by politicians of most parties; scientific innovators are equally attacked in medicine. But, in politics, the fate of the innovator may entirely depend upon money, newspaper influence, misrepresentation of facts, party combinations, or propaganda. In science the innovator is sooner or later accorded his rightful place when the truth or falsity of his claims is established by experiment, logic, and observed fact. The careers of President Wilson and of Lister provide significant examples of the two methods.

Concentration upon administration and lack of appreciation of real scientific needs are exemplified by the municipally controlled services, in which pathological and other special staffing is inadequate, except for bare routine. The voluntary hospitals, starved of money as they are, compare in these essential respects most favourably with their municipal sisters, who have, or should have, unrestricted financial support.

Intellectual activities are not encouraged by politicians. Education is the most important of all such activities, and the bureaucratic treatment of education by politicians, both in Parliament and in local councils, is of sinister omen. The initiative of teachers is damped centrally; they are poorly paid, and mercilessly overdriven as indicated by the size of classes in the pre-war period. The financial worth of the teacher to the community in many cases is assessed at a lower level than that of the bus-conductor.

Ideally, administration should decapitate itself and minister fully to science, thus allowing scientists and doctors full scope to serve the public. The great advances in American medicine in the last 25 years are probably largely due to the humble place generously and voluntarily taken by the administrators of such funds as the Rockefeller Trust. A similar attitude could be assumed by State ministrators in a British Medical Service. Wise generosity is a good investment.

The political risks inherent in State control of medicine are real enough when this is centrally directed. They become greater when the control is relegated to small local bodies. The local magnates, farmers, trade unions, and other interests will all bring pressure on the isolated medical bureaucrat. This latter, for the sake of the peace and quiet so desirable for steady Civil Service promotion, will almost inevitably try to keep his local doctors and scientists quiet and orthodox, and will tend to discourage those experiments and investigations necessary for advance in medical knowledge. In a State service the local liaison between the public and the profession should be designed to be non-political.

The muddle-headed thinker and the political fanatic will deduce or pretend that any criticism of politicians and adminis-

trators in this connexion is an attack upon the whole idea of State medicine. This is untrue and is founded upon false logic. The two issues, State financing of health services and autocratic political control over science, must be considered separately. A system which combines these is completely unacceptable. One in which science is free and finance is inadequate is better, for progress follows intellectual freedom. A system which combined financial support with complete intellectual and professional freedom would be ideal. If State financing of medical services is an economic necessity the wisest course would be to place it under a detached and sane body such as the Privy Council. In this way medicine might be saved from becoming the new electoral toy or the helpless prey of central and local party politics, and there would be some hope of preserving that individual initiative which both Mr. Herbert Morrison and Mr. Oliver Lyttleton have recently praised as being so valuable "in its proper place." No more proper place for this quality exists than medicine.

The medical profession can help to clarify the issue by determining solidly that, at all costs,

1. Medicine and science must not be political.
2. In any State service the administrator shall become the minister, the servant of the public and its doctors.
3. The profession must be controlled by itself—that is, democratically from within in respect of its medical affairs.
4. In any State service promotion must be by professional ability and not by seniority.
5. The public must not be fobbed off with a medical service which will be just adequate. The country must be prepared to pay for the best possible service.
6. Research and medical teaching must be intellectually free and generously financed.
7. Opportunities for reviewing and remodelling the system from within must be available.

The conclusion of this matter is of vital interest to all branches of science and therefore to civilization; for science is the sap of civilization. Medicine is the most powerful, politically, of any scientific activity. If it follows education into the political maw there will be little to prevent all other intellectual activities and freedoms from following. It is imperative, therefore, that freedom of scientific action, speech, and criticism be insisted upon quickly by all scientists, both for medicine and for themselves. The mind is greater than the body. Habeas Corpus was one milestone in human freedom; Habeas Mentem must be made the second.

Reports of Societies

NASAL ALLERGY

At the last meeting of the Section of Laryngology of the Royal Society of Medicine, Mr. V. E. NEGUS presiding, the discussion was on nasal allergy, excluding hay-fever.

Dr. GEORGE BRAY declared that the allergic nose accounted for at least one-third of the practice of the rhinologist. Allergy should be suspected in cases of persistent sneezing, running, blockage, and polyposis, especially if there was a family history of similar symptoms. In a person with allergic predisposition the first nasal discomfort usually occurred as a sequel to upper respiratory infection. The commonest time was early in the morning, following contact with a cold environment. The sequelae were cough, asthma, headaches, deafness, and formation of polypi. He gave the following list of specific sensitizing substances:

Inhalants: feathers and down, orris root, animal emanations, tobacco, dusts, drugs, insecticides, fungi, osmyls, and odours.
Ingestants: foods (wheat, eggs, milk, chocolate, tomato, nuts); drugs (aspirin, iodides, quinine).
Physical agents: cold, heat, light.
Infectants; bacteria rarely sensitizers.
Non-specific irritants: strong smells, bright lights, tobacco smoke, petrol or oil fumes, sulphur fumes, chlorine in water.

Peeling new potatoes, cooking legumes, handling soap powders, and walking past a fried-fish shop had been known to induce attacks. Treatment should be primarily from the allergic aspect. General treatment comprised avoidance of fatigue and emotion, and irritants should be removed. Specific desensitization was of value; non-specific was useless. Among drugs, adrenaline, ephedrine, and benzedrine were useful; cocaine, menthol, and calcium should be avoided. Endocrines were often beneficial, especially thyroid in old people, and ovarian extracts at about the menopause. In surgical procedures conservatism was the keynote of treatment. Ionization was only temporary in its effects, and the value of diathermy and radium was questionable.

Pathological Aspects

Dr. CYRIL POLSON, after a brief history of the subject, discussed the findings in gastric analysis, blood sugar estimation, and liver function tests in allergy. Hypochlorhydria in these patients was usually associated with excess of mucus, and probably due solely to that cause. The mucus was more likely to be derived from the respiratory tract than from the gastric mucosa. A low fasting blood sugar concentration might occur in allergic patients, but the cause was not yet explained. Evidence of liver dysfunction in allergy was equivocal. Among naked-eye and microscopical appearances eosinophilia and oedema of the mucosa were the outstanding changes. The eosinophil leucocytes were derived from the bone marrow and conveyed to the nasal mucosa by the blood stream. The mononuclear type of eosinophil leucocyte was, for the most part, only a degenerate form of the polymorph cell. The cause of mucosal oedema was still unexplained, but oedema appeared to be an essential factor in the development of nasal polypi.

Lieut.-Colonel MYLES FORMBY said that the local manifestations of the clinico-pathological syndrome of nasal allergy often hid the dyscrasia which was the basic enigma, itself an anaphylactic phenomenon. About 400 cases of allergic rhinitis seen in the course of five years were analysed as follows:

	Males	Females	Total
Uncomplicated	48	67	115
With ethmoiditis	122	116	238
With polypi	29	14	43
Asthma (no nasal sign)	7	4	11

Allergic rhinitis had become increasingly common during the last ten years. Local infection played no important part until it had been grafted into the upper respiratory mucosa by surgical interference. It was then a secondary complication, not a fundamental aetiological factor. Under treatment he described a technique for applying radium to nasal polypi. It consisted of the application of 12 needles (6 on each side) for 7 hours, the dose being 546 milligramme-hours.

American Experience

Several officers in the U.S. Army Medical Corps gave their experience. Colonel CANFIELD said that in his American clinic the surgical approach was extremely conservative, and in very few out of 150 cases which he had taken was any major sinus surgery done. The congestion inside the nose had been relieved by removal of obvious polypoid material, and occasionally the ethmoid was opened if there was severe infection. In his view the polypoid condition occurred first, and then, because of obstruction, the nose became more susceptible to an infecting agent. Major FOWLER described allergic rhinitis as a manifestation of sympathetic or parasympathetic imbalance. Major HOOPLE said that the experience he had had with allergies had not been satisfactory enough to make him feel that these cases should be turned over to the allergist and discharged from the care of the rhinologist. Rhinologists must keep these cases in their own hands, realizing at the same time that they were cases of general disease. Captain RICE said that the simple fact was that not enough was known about this condition, and that by study of the local state not much more was going to be found out. Any more definite information was likely to come from the biochemist.

Mr. MUSGRAVE WOODMAN said that he had had good results from the old process of cauterization. Zinc ionization was not a cure-all, but many cases so treated went through the summer without hay-fever. He criticized Colonel Formby's use of radium. Colonel Formby put in a fairly large amount of radium for a very short time. The line now followed was to apply radium in smaller doses for longer time. He believed it most inadvisable to carry out any operation in the acute stage. Psychology was a very important factor in these cases, and he had had some good results from routine breathing exercises.

Mr. C. HAMBLEN THOMAS said that he had had some success with diathermy and also with intramuscular calcium injection. It did not, however, act in every case. Allergy was a peculiar condition and rhinologists must look to physicians and biochemists to help them out. The less they interfered the better. Dr. VERA WALKER suggested, on the basis of some dietetic studies, that a deficiency of eggs and milk might be a predisposing cause. Dr. T. B. JOBSON considered that these allergic cases were likely to get worse if inhalants were used. A common medication was mainly liquid paraffin broken up into very fine droplets which was inhaled into the lung, and after a time the alveoli became blocked up with fine particles, and a condition like silicosis occurred. During 15 years he had got better results from ionization in the nose than from any other form of treatment.

Major IRELAND had found some cases relieved by ionization. He did not like the idea of turning all these cases over to the allergist. Dr. F. A. PICKWORTH showed slides illustrating the eosinophilia in these cases. Dr. FRANCIS said that any operation which damaged or removed nasal mucous membrane made the patient worse. The most valuable surgical measure was submucous resection if there was a marked infection, but it should not be undertaken otherwise, Combined with nasal treatment, any measures which improved the circulation would be found to help in vasomotor rhinitis. Even by rubbing the back of the neck and the scalp the congestion of the nose was relieved.

Dr. BRAY, in reply, said that in desensitization it was usual for patients to react to several allergens. The patient was asked to avoid these as much as possible, but in the case of the more common allergens he was desensitized to the main substances to which he reacted. Nowadays concentrated solutions were used, adrenaline was added to the solution to prevent an immediate reaction, and the desensitizing solution was given several times a day. With this more concentrated and rapid course of injections the majority of these cases would improve.

Correspondence

Medical Reorganization: The Constitutional Position

SIR,—I attended the meeting of consultants and specialists at B.M.A. House on May 19 but was unable to stay long enough to ask a few simple questions which may have a profound bearing on the present situation. I should therefore be grateful if you would publish the following remarks and queries. There is no attempt to disparage the magnificent work done by the B.M.A. and its various committees; their deliberations and useful spade-work may prove invaluable in good time. For the present I should like to put the following up for consideration:

1. Did the demand for State control or drastic reorganization of the medical profession come from either the general public or the profession?

2. As the answer to the foregoing is clearly "No," has the present House of Commons any mandate to introduce legislation of this very advanced nature without reference to the electorate?

3. Is not the main feature of totalitarian rule the planning of the lives of the community on important issues without reference to the wishes of the populace?

4. Is not the present Parliament (elected on totally different issues, years ago, and only tolerated as a wartime emergency) proceeding far beyond the powers which are intended by the Constitution of this country in attempting to introduce such controversial legislation without reference to the electorate?

5. Does any emergency exist to demand the hurrying on of this legislation in such abnormal times? Would it not be more rational to postpone action until an already overworked profession has time and opportunity to determine its own rights and future calmly?

6. Has the subtlety of the way that this has been presented by the Government been realized? Have we not been told in fact that unless we devise some scheme for reorganization of the profession the Government will present its own scheme which we shall *have* to accept? Have the implications of this been grasped? If we do prepare such a scheme and submit it, cannot the Government then turn round and say, "We are forcing no legislation. Why, here is the doctors' own idea of a scheme for a State Medical Service"? By this means they could present an apparently constitutional case for a State Medical Service in the absence of an electoral mandate. "*Here are the doctors' own proposals!*"

7. Is not the wartime habit of unquestioning subservience to all legislation being used as a lever to make us believe that all proposals of the House of Commons are inevitable? Is this really the case in matters not relating directly to the war effort? Have we already undergone that degree of "Nazification" or does the chance still remain for us to cling on dearly to our constitutional rights? Is that not what this war is being fought for, and if we do not keep those rights does it matter very much which side wins?

8. Does anyone seriously suggest that the opinion of men on active service or with the Forces, living under abnormal wartime conditions, can really be regarded as their considered opinion of the future? Are not they and those now studying medicine the main portion of the profession whose whole future is at stake and which is being decided in their absence?

9. Would not any sane person say, "*Plan now, deliberate now*, but for the love of Heaven don't attempt to *legislate* in this paranoic atmosphere"?

10. Finally, as an old and ardent supporter of and worker for the B.M.A. I am bound to ask this: If it comes to a question of actual negotiation with the Government, has the B.M.A. any concrete sort of mandate from the profession as a whole to act on its behalf? I submit that before the profession is committed in any way it will be necessary to see that every doctor has an opportunity of voting individually on the proposals. Is not the whole question of handing over our profession to the State far too serious an issue to be handled without a proper referendum of our own? And if we are handed over to the State how shall we criticize the administration of affairs by officials? This is a very necessary procedure on occasions, as in the recent diphtheria prevention campaign, when, in the early stages, the Ministry of Health committed almost every conceivable major blunder because of the inexperience of its advisers on most of the practical and some of the technical issues. These howlers it was my privilege as a private independent worker to attack, and they have all been rectified. But who can expose idiocy when we are all in the asylum under the care of a loving keeper?

If any who read this letter should see any sense in my contentions and queries, would they draw the attention of others to the matter? There might even be food for thought as regards resolutions at Division meetings and queries to M.P.s on the constitutional issue.—I am, etc.,

London, S.E.5. GUY BOUSFIELD.

A Problematical Future

SIR,—As one no longer interested personally in the practice of medicine, but deeply concerned with the future of the profession, perhaps I might be allowed to place on record my views with regard to the Beveridge plan, so far as it affects medicine.

In a professional life which embraced the club system and the National Insurance Act (the latter of which I heartily sponsored), I have always regarded as a high privilege being to a certain extent my own master, and it is for that reason, among others, that I should advise a very careful consideration of all the implications which an acceptance of the scheme would involve. I willingly embrace the thesis that the welfare of the patient should be our first consideration, but I am not prepared to admit that his treatment will be materially better under the scheme than that afforded at present. In actual practice I have not found that team work—which is a feature of the scheme—yields better results than individual care coupled with invoking other advice when necessary.

Be that as it may, there can be little doubt that in the case of the seniors in the profession their financial position will be definitely worsened, though I would not stress that objection as being fundamental. Should there be any doubt on that point, it is only necessary to consult *Whitaker*, where the

incomes enjoyed by civil servants in comparable positions to those prepared to work the scheme will be found less attractive than those enjoyed by the bulk of the profession to-day, and such amenities as pensions and liberal holidays will lose much of their attractive appeal.

Sir William Beveridge seems to show a disarming ingenuousness when he proposes to give substantial sickness allowances. No doubt in a guileless world this might be feasible, but in a world where "lax" certification is not unknown and the reluctance to return to work is, it points to a lack of knowledge in dealing with this aspect of the question. If we feel dissatisfaction on this point on which medical men can feel sure of their ground, a certain reluctance to accept his authority on other points not so accessible to us is not unreasonable.

I would therefore submit that we should be extremely chary of abandoning our present liberties for a chimerical future. To surrender the "glorious privilege of being independent" is not lightly to be undertaken. And above all let us remember that a decision once taken is irrevocable. There is no turning back.

"Facilis descensus Averno,
Sed revocare gradum . . ."

—I am, etc.,

Cheadle Hulme. H. ELKINGTON SMITH.

Planning of Medical Education

SIR,—Prof. Francis Davies's article on the planning of medical education (May 1, p. 547) contains some excellent features, but certain suggestions must not pass without a challenge. Many of us will endorse his statement that "the better students take the present curriculum in their stride." It may be true to say "that too high a proportion are not up to the standard required." It is most certainly true to state that we have no desire "to bring down the standard or scope of the various subjects to the level of such students." Why, then, does Prof. Davies wish to dispense with the Second M.B. examination? Does he hope to raise or even maintain the present standard by such means? We are all painfully aware of the student, described by Prof. Davies, who can deal with his subject in small doses and yet is completely at sea when asked to correlate one fact with another. Surely the Second M.B. examination should be retained in its entirety if only to eliminate this very poor type of candidate as early as possible.

I cannot imagine anything more demoralizing than to require students to dissect the body in parts (which are purely arbitrary anyway), to examine them in detail on each separate part, and then to inform them officially that they can now forget what they have learnt. Are we never to test the student's powers of co-ordinating the anatomy of the body as a whole? By such a procedure, we are told, "we could get rid of the premium at present placed on mere feats of memory." Would Prof. Davies please tell us who *is* placing a premium on such feats? If he is referring to the present-day examiner in anatomy it is a most serious reflection upon his colleagues and one likely to be hotly challenged.

Surely Prof. Davies is a little out of date in asserting that students are allowed "to descend from degree to diploma" and to "crawl along the curriculum." I would remind him that in these days every student, if he is to retain his place in the school, has to be certified periodically to the Ministry of Labour as making satisfactory progress. It is our bounden duty to see that we do not return to the bad old days after the war.

Among the reforms advocated by Prof. Davies is one stating that all candidates for entry should be interviewed by a committee "comprising representatives of all faculties," whose duty would be to examine the candidate, his history and achievements in some detail. Does Prof. Davies realize how long such an investigation takes per candidate? From my own experience I can state that it cannot be accomplished in less than 30 minutes. By the time the committee had worked solidly from 9 a.m. to 1 p.m. and from 2 p.m. to 5 p.m. they would have examined precisely fourteen candidates. If the selection is to be really worth while, then at least three times the number of candidates to be admitted would have to be interviewed. Thus for a school admitting 100 students Prof. Davies's committee would be in continuous session for rather more than four weeks. I can well imagine that Prof. Davies's enthusiasm would stand him in good stead in such trying circumstances, but his colleagues from other faculties might be excused if they alternated between irritability and lethargy. Has Prof. Davies faced the possibility of his colleagues demanding a *quid pro quo* for *their* entrance problems?—I am, etc.,

Birmingham. C. F. V. SMOUT.

The Diet in Diabetes

SIR,—May I thank Dr. Micks (May 15, p. 598) for his very welcome ventilation of this subject of diabetic restrictions. So far as I know it has never been shown that a high blood sugar *per se* ever did anybody any harm. Of the common complications, coma is now accepted as being due to ketosis, and arteriosclerosis is not unconnected with lipid metabolism. The lowered resistance to infection is often alleged to be due to a raised tissue sugar. May it not be caused by impaired blood supply and nutrition?

For the past three years I have treated all my diabetics by restricting their fats to some 50 g. per day. Otherwise they eat what they like. They are given sufficient insulin to abolish ketosis, maintain weight, and reduce their glycosuria to reasonable limits. They are seen at intervals and carefully watched for acetonuria. Moderate glycosuria is acquiesced in. So far they all remain well. Their insulin requirements tend to drop rather than rise. They are much happier, a not unimportant point. My only difficulty is to explan why I will not permit them to eat fat when the Government allows them an extra butter ration!—I am, etc.,

Portsmouth. J. C. PRESTWICH.

Calorie Control Diabetic Diet

SIR,—The active correspondence elicited by the article of Dr. A. C. Crooke and Miss Ella Scott (Jan. 16, p. 64) on the "new" principle of caloric regulation in diabetes has apparently ignored the fact that the Rockefeller Institute monograph which I published with Stillman and Fitz in 1919 was entitled "Total Dietary Restriction in the Treatment of Diabetes." The powerful influence of total calories and body weight was established by animal experiments and clinical studies before the discovery of insulin. This law afforded control of cases which had never been controllable by restriction of sources of glucose alone. It is not invalidated by accidental fluctuations of tolerance in mild cases, or by the slowness with which the bad effects of caloric excess become manifest in such cases. That it was also not affected by the observations of Newburgh and Marsh, Petren, and other advocates of high-fat diet is shown by two facts. First, in the original Newburgh-Marsh publications it will be noticed that only the relatively mild cases in older patients were dieted with high fat, and the severe cases were actually on low calories. Likewise, no one else has ever taken a series of cases which were severe according to our standards in the Rockefeller and Physiatric Institutes and kept them controlled for years without insulin on high caloric diets. Secondly, the slower influence of total calories and body weight in milder cases is so potent under right methods that Newburgh has now gone further to the opposite of his former position than most clinicians can follow, by asserting that mild diabetes with marked obesity often is not a true diabetes, or can be actually cured by reduction of total diet and body weight.

Immediately after the advent of insulin the varying insulin requirements resulting from alterations of protein, carbohydrate, fat, total calories, and body weight were demonstrated precisely in the papers published by Sherrill and myself in the *Journal of Metabolic Research* for Nov.-Dec., 1922, and Jan., 1923. In short experiments the glycosuric and hyperglycaemic effect of carbohydrate is predominant. In the long run the extra need for insulin with high carbohydrate in comparison with an isocaloric diet with low carbohydrate is relatively slight, as we proved with carbohydrate allowances up to 250 g. Later this fact was "discovered" and abused in the period of excessive carbohydrate diets, which are feasible but usually inconvenient and productive of undue blood sugar fluctuations. On the other hand, if most of the carbohydrate in any diet is replaced by its glucose equivalent of fat, thus greatly increasing the total calories, the immediate result may be a slight fall in insulin dosage, but as the body weight gradually rises the insulin requirement becomes increased and

may finally be multiplied. In suitably prolonged tests the insulin requirement created by the most extreme disproportion of carbohydrate is trivial compared with the huge requirement created when a severely diabetic patient is fattened by a long-continued high caloric diet of either high or low carbohydrate content.

Insulin has covered a greater multitude of sins and fads than any other known remedy. The dietary principle of total caloric regulation furnishes the basis for an elastic and efficient control of all types of diabetes, with adaptation to the need and comfort of each individual. An explanation of the puzzling scientific fact may be opened up by the experiments of C. N. H. Long (*Proc. Amer. Diabetes Ass.*, 1942, **2**, 99). The fact itself—namely, the demonstrated predominant role of total calories and body weight and the relatively minor influence of total glucose value of the diet—has stood unshaken since the decade 1914-23, and can be confirmed by anybody who chooses to repeat our early experiments.—I am, etc.,

New York City. FREDERICK M. ALLEN.

Aviation Medicine

SIR,—May I write in defence of my book on *Aviation Medicine*, which your reviewer (March 6, p. 287) does not like and on which he has, so I believe, not fairly reported? First of all, he has failed to say that, in contrast to existing textbooks of the same title, my book is not addressed to the medical specialist of aviation but "to members of the Air Forces, medical men, teachers, and everybody else who takes an intelligent interest in flying." At the time of writing my book such a publication was not in existence. There is, of course, an urgent need to acquaint lay people, and more particularly flying personnel of the Air Forces, with certain aspects of aviation medicine. This became obvious to me first during the years before the war when I was actively engaged in flying, and this conviction was emphasized during the first two years of the war when I had to give lectures on aviation medicine in various Air Force camps in this country. More recently I have devoted my time exclusively to physical education, being the medical consultant in this subject to the Northern Command of the South African Defence Force. But I am, as no doubt you are too, aware that the need for supplying air crews with information on medical aspects of flying has now been generally recognized by virtually all Allied Air Forces. Thus I think there is room for a book written for this purpose presenting aviation medicine in a form which non-medical men and medical non-specialists will understand. I have good reason to believe that many air crews as well as medical officers consider that this aim has been attained.

It appeared to me that a bibliography should not be attached to such a book, a point for which your reviewer has taken me to task. Writers like H. G. Wells, Julian Huxley, and Hogben, who also hold that technical information is not the monopoly of the specialist but that it should be placed at the disposal of those who apply it as well as of the ordinary man in the street, have done likewise. No apology is needed for not referring to "knowledge which has accumulated in the past four years, but which will not be available for publication until after the war." I considered, and still consider, it essential that a book of the kind I have written should be available to our flying men *during* this war. Books for the "more conservative" ones who wish to read about all scientific experiences collected since 1939 will undoubtedly be published after the war is won.—I am, etc.,

Johannesburg. E. JOKL.

Indian Army Medical Corps

SIR,—In the article on the foundation of an Indian Army Medical Corps (May 8, p. 575) there is the phrase "slow-moving East," which apparently means that there is some characteristic in the Eastern climate and in the people there which is responsible for the delay in the institution of this medical body for the care of troops. A reference to the report of the Royal Commission on the Administration of Expenditure of India, 1896 (vol. 1, p. 378), will show that Dr. K. N. Bahadurji in his evidence advocated the formation of an Army Medical Service and a separate Civil Medical Service on grounds of economy and efficiency. The Indian Medical Service (I.M.S.) was, in the words of the letter of the Government of India, primarily military, whose officers were lent to the civil medical department to fill all the higher-grade posts in colleges and hospitals, and who were to return to military duty when wanted by the Army Department, and not, as you say, "originally a civilian service which provided doctors for the Army."

This matter was referred to by me in letters published in your columns and by numerous questions through friends in the House of Commons in the time of Lord Morley and Mr. E. Montagu. It has also been brought to the notice of the Government in the public press and on platforms in India. The opposition to this reform came from the India Office. You had neither the good will nor courage in those days to support the efforts of Indian doctors; you were under the influence of I.M.S. officers of the Military and Naval Committee of the B.M.A. It is gratifying, therefore, to see a departure from that policy of reserving the higher-grade appointments on the civil side for military officers. I see, also in the *Journal* of May 8 (p. 583), that Dr. S. R. Naidu, a civil doctor, is chemical examiner to the Government of Madras, a post which was before reserved for I.M.S. officers.—I am, etc.,

London, S.W.12. V. P. GONSALVES.

Abortus Fever

SIR,—Dr. Alasdair McI. Smith (April 3, p. 425) refers to the "almost certain" increase in the incidence of abortus fever in the human population as a result of the vaccination of non-pregnant cattle with living vaccines of *Br. abortus* and to the policy of the Ministry of Agriculture concerning vaccination. A statement of this kind may lead to a serious misapprehension of the position.

In cattle naturally infected with contagious abortion (*Br. abortus* infection) there is a tendency for the organisms to become located in certain organs, including the udder, with the result that the milk of such animals often contains virulent *Br. abortus*. The disease is so prevalent among cattle in this country that, generally speaking, it is impossible to control it by methods of segregation. There is, however, a growing volume of evidence in the United States, in this country, and elsewhere that it can be successfully controlled by immunizing cattle with vaccines prepared from living cultures of *Br. abortus*. There is as yet no satisfactory evidence that equally successful results can be obtained with dead vaccines. We are, in fact, in the same position in controlling contagious abortion in cattle as in controlling small-pox in man: we have to use living vaccines prepared from strains of attenuated virulence.

The Agricultural Research Council, following an extensive series of trials in cattle and an examination of the evidence in this country and in the United States, has recommended that two specified strains of *Br. abortus* should alone be used for the preparation of living vaccine. The Ministry of Agriculture is now producing vaccines from these strains for use in the scheme for the control of diseases of dairy cattle, and also, to a considerable extent, in the control of contagious abortion in herds not included in the above scheme. Long experience has shown that these strains are of such a reduced virulence that they neither set up the disease in cattle nor render them infectious, but they retain their immunizing properties. This state of reduced virulence is maintained by the method of preservation adopted.

A large number of careful experiments have failed to give any evidence that either of these attenuated strains, after injection into cattle, is excreted in the milk. From the public health point of view the position is, therefore, as follows. If these vaccines are not used the public run the risk of drinking milk infected with fully virulent *Br. abortus*. Where the disease is controlled by the use of these attenuated vaccines this risk is considerably removed. It is not even replaced by the much smaller risk of drinking milk infected with an attenuated strain. In view of these findings the Ministry of Health approved the use of these vaccines, and last year amended the conditions of the Milk (Special Designations) Order so that it is now permissible to vaccinate with these vaccines cattle in T.T. herds in which *Br. abortus* infection is present.

It will thus be evident that far from there being a likelihood of an increase in abortus fever following the use of *Br. abortus*

vaccines issued by the Ministry of Agriculture, the resultant control of contagious abortion in cattle by this method should go a long way to minimize the risk of infection in the human population.—I am, etc.,

Weybridge. T. DALLING.

The Contaminated Injection

SIR,—Your article "The Contaminated Injection" (May 15, p. 608) raises a new point in this vexed matter of the dangers of infection by hypodermic injections. I have enjoyed immunity from any kind of trouble in this connexion for 20 years, during which a very great number of all kinds of injections have been given, and I attribute this to a routine by which the asepsis of syringes and needles is maintained with certainty. The evidence of aerial infection is particularly disquieting, for it obviously raises a legal point of great importance.

Since it is authoritatively stated that the introduction of air into a phial, the contents of which are to be injected later, *may* be dangerous and even fatal, it seems to me that in law a prima facie case of culpable negligence would lie against any registered medical practitioner who used for injection any preparation kept in bulk. It is plain that, no matter what precautions are observed, any phial can become infected by the inevitable entry of air (through the needle hole in the cap) due to the reduction of pressure within the vessel which results from the withdrawal of fluid into the syringe. This air entry being a fact, it follows that anyone using that phial for a second injection does so with full knowledge that its contents may be infected and dangerous, and I do not see how he could possibly rebut a charge of failing to exercise "a reasonable amount of care." It thus appears that the only thing we can do is to cease to use preparations in bulk and confine ourselves, as many of us already do, to sealed ampoules containing single doses.—I am, etc.,

Sunderland. A. KEFALAS.

Calcium Intake in Pregnancy

SIR,—It is a pity that Dr. H. M. Sinclair did not immediately retract or modify publicly the brief extract of his paper reported in a January issue of this *Journal*. Like Dr. Sinclair, I also have had to write to colleagues, since the abstract of his paper appeared, emphasizing the importance of a high calcium intake in pregnancy.

As stated in my previous letter, I have been unable to trace any work which supports the belief that a *high calcium intake* prolongs either pregnancy or labour. *The abstract of Dr. Sinclair's paper dealt specifically with this aspect.* Abel's work, which Dr. Sinclair cites, refers not to the *intake of calcium* but *to vitamin D*. It is important not to confuse their different actions.—I am, etc.,

J. DOUGLAS ROBERTSON.

Courtauld Institute of Biochemistry, Middlesex Hospital, W.1.

Pertussis Antigen

SIR,—In your issue of May 8 (p. 562) Dr. R. S. W. Baker gives a summary of his results in the treatment of whooping-cough with Lederle's pertussis antigen. A personal experience in my own family, using this preparation as a prophylactic, may be of some interest.

About the middle of May, 1942, I gave two injections of 0.5 c.cm. at an interval of one week to my son aged 2 years. (The recommended prophylactic dose was three injections of 2 c.cm. at weekly intervals, but I thought I would reduce the dosage.) Towards the end of the second week the boy developed a cough which became spasmodic by the end of fourteen days. At the beginning of June I took my family to Scotland, rejoining my daughter, aged 3½, who had been evacuated there since November, 1940. During the first week of June the boy's cough became more severe and he vomited frequently after coughing. He had a mild attack of whooping-cough which lasted about fourteen days. We returned after three weeks, the boy being almost over the illness. Within ten days I learned that the girl had a severe cough, which in another few days proved to be a moderate attack of whooping-cough. She was ill for a period of six weeks and lost considerably in weight.

There are no other children in either household, the girl living with her grandparents, and the assumption was that the girl had been infected from the boy. Her illness was much more severe. The method of infection could not be proved, but the evidence was rather presumptive of the potency of the pertussis antigen.—I am, etc.,

Birmingham. A. WILSON RUSSELL.

Treatment of Malignant Tertian Malaria

SIR,—Dr. J. E. Murray (May 15, p. 613) seems surprised that the case recorded by Drs. W. L. Anderson and D. B. Bradshaw (April 24, p. 508) had responded to quinine. The League of Nations Malaria Commission has already pointed out that the strains of *P. falciparum* vary in different places, and that the West African strain is the most susceptible to quinine therapy. How susceptible is not generally realized, especially by doctors who deal with the resistant types elsewhere.

In 1928 I was accompanying a patient convalescing from hyperemesis gravidarum from the Gold Coast to England. The morning we sailed the patient developed a temperature and large numbers of *P. falciparum* were found in the blood. That night, on board, 6 gr. of quinine were given intramuscularly, and this was repeated in 48 hours. No further treatment was given on account of the hyperemesis. The patient made a complete recovery (on 12 gr. of quinine), and has had no recurrence of malaria.—I am, etc.,

Epsom. O. G. WILDE.

Direct Inguinal Hernia

SIR,—I was interested in Surg. Lieut. M. R. Ewing's letter (May 15, p. 612) describing a special type of direct inguinal hernia, as I have recently encountered a similar case. The patient was a man aged 61 admitted with a strangulated right inguinal hernia, which was diagnosed pre-operatively as being of the indirect type. At operation it was found that the hernia was of the direct type, the sac protruding through an oval opening (1/2 in. long and 1/4 in. wide) in the fascia transversalis, the strangulation being caused by the narrowness and inextensibility of this opening. The bladder did not form part of the wall of the sac in this case. After reducing the hernia and excising the sac, a repair was made by suturing the opening in the fascia transversalis and uniting conjoined tendon with Poupart's ligament. He made an uneventful recovery.

In view of the mechanism of this hernia, strangulation should be a common complication. However, I can find only one reference to strangulation in the literature—one of Mr. W. G. Gill's cases described in the *Journal* of Feb. 11, 1939 (p. 263), was a strangulated Richter's hernia.—I am, etc.,

Liverpool. R. A. C. OWEN.

Interstitial Emphysema during Labour

SIR,—Mr. Vaughan Pendred's remarks on a case of interstitial emphysema during labour (May 8, p. 582) are interesting, especially the passage that a Queen Charlotte's consultant who was called in to see the case declared that he had never seen the like, thereby showing how rare the condition is. When resident medical officer at Queen Charlotte's Hospital in 1914 I published a case of this condition in the *Lancet* (1914, **2**, 445) and therein gave the cause of the disability as explained by the late Sir Francis H. Champneys. The emphysema in these cases is due to rupture of an air vesicle on the anterior surface of the root of the lung, the air escaping under the pleura into the anterior mediastinum and then up beneath the cervical fascia to the neck and chest.—I am, etc.,

Hendon, N.W.4. EDWARD SMEED.

SIR,—Your correspondents have recently drawn attention to cases of interstitial emphysema occurring during labour, and the suggestion was made by Dr. Phillips (May 1, p. 552) that it might result from the entry of air into the tissues of the face through a rent in the lining of the lacrimal duct. I do not think the association is unduly rare, as most obstetricians see such cases from time to time. The last which occurred under my care may throw some light on its mode of production.

The patient was a primigravida aged 28 with a slight degree of general contraction of the pelvis, the diagonal conjugate measuring 4¼ in. The presentation was an LOA, and she was submitted to trial of labour. This was successful, and

after a labour lasting 22 hours, and characterized by strong and regular pains and good co-operation on her part, a living female child, 7 lb. 14 oz., with marked moulding and caput succedaneum, was born at 10 a.m. On the evening of the day of delivery the characteristic crepitus of surgical emphysema became apparent beneath the skin of the neck, face, and upper thorax. By the next day it had spread to the shoulders, arms, and costal margins, and on *x*-ray examination the mediastinum was seen to be extensively involved. The emphysema reached its maximum distribution on the 4th day post partum, after which it lessened and became impalpable on the 9th day, although the radiological appearances of the mediastinum were not normal until the 14th day.

This case would seem to indicate that it is a ruptured pulmonary bulla which permits the entry of air into the interstitial tissues of the lung, whence it passes to the neck and adjoining regions via the mediastinum. So far as I know, no harmful effect results from the condition, though transitory cyanosis and dyspnoea have been noted.—I am, etc.,

Stockport. C. W. F. BURNETT.

Collapse Therapy

SIR,—I agree with much of what Dr. Patrick Heffernan has to say in the last paragraph of his letter (May 8, p. 581), but from his opening remarks I gather that his experience has been unfortunate. Most of us will not agree that the number of cases of tragic results following artificial pneumothorax is appalling.

Dr. Heffernan states that "at one time not so long ago" I abandoned the procedure of adhesion section. May I take this opportunity of correcting him. I am a strong upholder that whenever adhesions are interfering with the effectiveness of A.P. collapse the intrapleural condition should be examined through a thoracoscope, and the adhesion divided if benefit is likely to ensue.—I am, etc.,

Ruthin, North Wales. H. MORRISTON DAVIES.

SIR,—Lest the thought be disseminated that there is general uneasiness about the value of the widespread use of artificial pneumothorax in the treatment of pulmonary tuberculosis, one cannot let Dr. Patrick Heffernan's letter pass without comment.

Our lamented friend Dr. Chandler is beyond the reach of controversy, but my distinguished colleague, Mr. Morriston Davies, has hitherto lacked neither the ability nor the inclination to speak for himself, and it would be a superfluity if not an impertinence on my part to take up the cudgels for him and explain why he abandoned "at one time" collapse therapy or whether it was because of the complication mentioned in Dr. Heffernan's letter.

Far from there being too much "physical interference" in many sanatoria throughout the country, there is not nearly enough. Artificial pneumothorax, adhesion cutting, and other measures such as extrapleural pneumothorax and thoracoplasty, may not be without their risks, but the risk of not doing them is far greater. Patients are allowed to rot behind the walls of sanatoria quite as surely, although perhaps more pleasantly, than did general patients in the dreary wards of medieval lazar houses. Ask the superintendent of a modern sanatorium to give some simple statistics of what happens to patients possessing cavities where no pneumothorax has been done or where an unselective collapse has been produced. Without further "physical interference" (for instance, before the time when division of adhesions was introduced at the North Wales Sanatorium) my own survey showed that 90% died within five years, and about 80% in less than this time.

The subject is far too big to discuss adequately in the scope of one letter or one article. Time spent in one of the progressive sanatoria where the medical superintendent and his assistants confer freely with the visiting surgeons will convince the observer that the invigorating breezes of carefully assessed and planned "physical interference" stimulate and revivify everyone concerned, and dissipate the miasma of inertia and complacency that all too often settles down upon and suffocates those whose lives are spent in the administration of sanatoria and the care of tuberculous patients.—I am, etc.,

Liverpool. HUGH REID.

*** This correspondence is now closed.—ED., *B.M.J.*

Unity in the Profession

SIR,—Dr. Donald Watson (May 8, p. 579) revealed an attitude which is very worrying. Because he considers that certain members of the medical profession are "of a different ideology" from that to which he considers he belongs, he wishes that their right to express their views as doctors be suppressed. In fact, he wishes to "liquidate" them politically in order to gain his own ends. One of the most undesirable features of Nazism is its practice of "liquidating" its opponents in order to gain its own ends—a practice which most thinking people deplore. Is it possible that Dr. Watson's desire to render salaried medical officers politically sterile is a reflection of their political virility?—I am, etc.,

E.M.S., Sector 6, London. H. E. VICKERS.

The Government's Proposals

SIR,—It was a real tonic to be present in the Great Hall at B.M.A. House on May 16 to hear Dr. Charles Hill deliver his masterly survey of the present position in the talks now going on between the Minister of Health and representatives of the profession. On account of leakages of information which have appeared from time to time in the national press, it was only right and proper that a full and frank statement should be given to those people most intimately concerned.

It is unthinkable that the profession should be governed by the local authority; I cannot imagine a worse arrangement. This speech will go a long way towards clearing the air, and will demonstrate to the profession that the three things most needed now are clarity of thought, decisive action, and, above all, unity of purpose.—I am, etc.,

West Harrow. E. W. MEURIG WILLIAMS.

SIR,—At the meeting of the Metropolitan Counties Branch of the B.M.A. on May 16 Dr. Hill made a clever speech and played skilfully on the prejudices—political and others—of that large gathering. The Government's proposals are tentative only, and admittedly many details, especially in regard to administration, leave room for adjustment and modification. Taken as a whole, however, these proposals constitute a new charter of life for the profession. They would lift medical practice out of the mire of commercialism and they would for the first time enable doctors to engage in their noble profession without the distraction of money considerations or the urge of pecuniary gain and profit.

On the financial side, too, the Government's proposals are adequate and even generous. I have no hesitation in asserting that, judged purely on their merits and freed from political bias and sectional influences, these proposals would be welcomed by the large majority of medical practitioners as greatly to their advantage and in every way an improvement on the present conditions of work and remuneration. There is indeed one particular freedom which would be appreciated by all of us more than any other so-called freedom, and that is freedom from anxiety, insecurity, or financial and business entanglements in our daily work.

We of the rank and file are looking to the B.M.A. for guidance, and we expect that guidance to be liberal in outlook and free from diehard irreconcilable bigotry. In face of the present great issues which are bound up with the life-work of every one of us, the B.M.A., in taking up an uncompromising attitude to the proposals made by the Government, is doing the public as well as the profession a great disservice. In a matter so vitally affecting the well-being and conditions of work of every one of us, I suggest that the B.M.A. should abstain from one-sided propaganda. Let a plebiscite be taken from the profession on the particular and specific issues involved, and let every one of us have the choice of free reflection and free decision.—I am, etc.,

London, N.W.6. SAMUEL GRASSE.

Hans Selye and S. Albert (*Proc. Soc. exp. Biol.*, N.Y., 1942, **49**, 227) find in experiments on rats that androstenediol and pregnenolone, when given with testosterone, prevent the atrophy of the testis which is produced by small doses of testosterone alone. They point out that the gonad-protecting power of a steroid is independent of its testoid action.

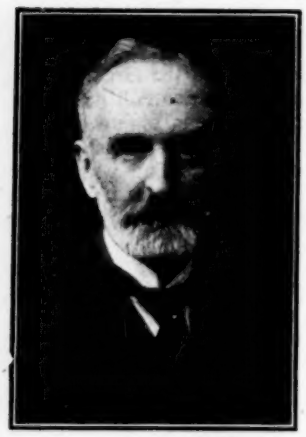
Obituary

SIR ARTHUR NEWSHOLME, K.C.B., M.D., F.R.C.P.

Formerly Principal Medical Officer, Local Government Board

A distinguished career in public health is recalled by the death on May 17 of Sir Arthur Newsholme, who was Principal Medical Officer to the Local Government Board until its absorption in the Ministry of Health.

Arthur Newsholme, a Yorkshireman from the Pennines, was born in 1857. His father, who had been churchwarden at Haworth to the Rev. Patrick Brontë, father of Charlotte, Agnes, and Emily, died when Arthur was a young boy, but his mother's prudence in straitened circumstances enabled him to receive a grammar school education, and he matriculated at sixteen. Afterwards he became dispenser and assistant to a Bradford doctor, and in 1875, with the help of a small legacy, he paid his entrance fees at St. Thomas's Medical School. Realizing the importance of registering quickly, he took the L.S.A. after three and a half years' training, in 1880 obtained the London M.B., and a year later the M.D., qualifying for gold medal.



Press Portrait Bureau.

After service in some hospital posts he started in private practice in Clapham, and in 1884 was appointed part-time medical officer of health for that parish or subdistrict, his salary being £80 a year. In 1888 he was chosen from among fifty candidates for the post of M.O.H. for Brighton. The salary was £500, which was less than the proceeds of his growing practice, but public health work fascinated him. When he left Brighton nineteen years later his salary was £1,000. In the largest seaside town in England his energetic work in such matters as the prevention of milk epidemics, control of scarlet fever, diphtheria, and typhoid fever, earlier administrative control of tuberculosis, and care of infancy and childhood marked him out among his fellows, and in 1908 he transferred his activities from local to central administration.

John Burns, who had become President of the Local Government Board in 1905, had a great admiration for Newsholme, and quotations from the reports of Brighton's medical officer of health, especially on the social aspects of the health of the child, figured from time to time in Burns's public speeches. Presently Burns asked him if he would be a candidate for the position of Principal Medical Officer to the Board, shortly to be vacated by Sir William Power. Thus Newsholme came to the desk first used by Sir John Simon. He left Brighton amid many expressions of regret.

During his period in Whitehall three great additional services were initiated and developed largely with the aid of Treasury subsidies—namely, maternity and child welfare schemes, tuberculosis medical services, and the special service for venereal diseases. Maternity and child welfare was always close to Newsholme's heart. In taking part in the forward movement to that end during his earlier years at the Local Government Board he prepared four special reports which were national studies of the whole subject. He was active also in the creation of the tuberculosis services, and attended as Government representative an international congress at Washington on this subject.

Coming changes in public health administration were casting their shadows before. On the day before he took up his appointment at the Local Government Board Newsholme gave evidence before the Royal Commission on the Poor Law. One passage from his evidence is noteworthy: "It seems to me necessary, for the maximum economy as well as efficiency, that every man should have the right to call for gratuitous diagnosis, treatment, and provision of medicine." That was several years before contributory sickness insurance, with medical attendance, as a kind of halfway house to the goal, had appeared above the horizon. Newsholme was at the Local Government Board during the passage of the National Health Insurance Bill. The war of 1914-18 was a harassing time for his Department, itself in the throes of change. Looking back on the war, he saw as a relatively slight offset to its overwhelming devastation the intensification and hastening of scientific investigation and its applications which had resulted, and he rejoiced in the immense impetus given by the war to direct work on behalf of mothers and infants. He resigned his post in Whitehall in February, 1919, a few months after the armistice and just before the coming into force of the Ministry of Health Act. His last year of office was marked by the epidemic of influenza, which in its world-wide incidence claimed as many victims as the war itself.

Immediately after his retirement Newsholme travelled to the chief cities of the United States, attending a series of conferences to promote child welfare, and he remained in Baltimore to lecture on public health administration at Johns Hopkins University and to inaugurate a new school of hygiene and public health. During this visit to America he learned, at the age of well over sixty, to drive a car, and wrote amusingly of his adventures on the American roads. One signpost which he saw gave him his text for future addresses on preventive medicine. It reads: "Say it with brakes and save flowers." During his travels in America he came into close touch with American pioneers in public health, and himself undertook a large programme of public speaking. This was not always in university halls. Another labour in still later years was a survey of medical work in various European countries; this took him into Italy, Hungary, Yugoslavia, Poland, and Scandinavia. Then came a visit to Soviet Russia; on his return in 1933 he collaborated in the writing of a book entitled *Red Medicine*. His own impressions of Russia at that time were very mixed. He saw it with some misgiving "going bald-headed" into a completely socialized medicine, a policy and action towards which nearly every Western country was advancing but by slow degrees.

Among other positions which Sir Arthur Newsholme filled at various times were those of examiner for the Universities of Oxford, Cambridge, and London. He was Milroy lecturer to the Royal College of Physicians in 1895, and he served on the interdepartmental committees concerned with tuberculosis and with dental registration and on the Army Sanitary Committee. From 1910 until 1919 he was a member of the General Medical Council. He was president of the Society of Medical Officers of Health in the opening year of this century, and first president of the newly formed Section of Epidemiology and State Medicine of the Royal Society of Medicine in 1907, when his presidential address was on poverty and disease as illustrated by typhus fever and phthisis in Ireland. He was made Companion of the Order of the Bath in 1912 and Knight Commander in 1917. He was a prolific writer, and in the section of public health of any medical library several volumes bearing his name will be found on such subjects as medicine and the State, vital statistics, the prevention of tuberculosis, and the evolution of preventive medicine; while papers from him on the history and affinities of rheumatic fever, the origin and spread of epidemic diphtheria, vital statistics of Peabody Buildings, a national system of notification and registration of sickness, the spread of enteric fever by sewage-contaminated shellfish, the causes of reduction in the death rate from phthisis, and a score of other subjects testify to his alert and interested mind.

He married in 1881 Miss Sara Mansford, a Lincolnshire lady. She died in 1933. Their marriage was ideally happy. Lady Newsholme was her husband's companion in his travels and collaborator in his work. She was herself a speaker of considerable ability.

Sir ARTHUR MACNALTY writes:

It is thirty years since I entered the Local Government Board as a medical inspector and was welcomed by Sir Arthur Newsholme. We were a small and happy medical fraternity in those days, and each one of us was in close relation with our chief. He never spared himself, and he was always ready to discuss our problems with us and to give us the fruits of his long experience. In the ten

years that Sir Arthur was Principal Medical Officer he laid the foundations of the national health services, which have so greatly expanded in recent times. He planned and organized the medical side of the tuberculosis, the maternity and child welfare, and the venereal diseases services. All this he did in spite of the interruptions to progress enforced by the war of 1914–18. He made a notable contribution to the war effort by seconding some members of his staff to the War Office to effect close liaison between the military and the local authorities in the provision for camps and hospitals and the treatment of epidemic disease. When the Ministry of Health was established and he left the public service he had the satisfaction of knowing that others would carry on the work which he had ably begun. In the years of retirement his facile pen was seldom idle, and he visited many countries in order to study health conditions and to advise on their problems. Newsholme had much affection for the people of the United States and greatly admired their work in medicine. He lectured at Johns Hopkins University and always welcomed Americans in his English home. His physical powers only waned within the last two years, but his mental energies were unabated. A charming host and a witty talker, he was always interested in his old colleagues and the progress of public health and medical work. Above all he was a good man who earnestly desired to leave the world better than he found it. Newsholme's name will ever be writ large in the history of public health.

We regret to record the death in his 77th year of Dr. WILLIAM SUMMERSKILL of Blackheath, father of Dr. Edith Summerskill, M.P. for West Fulham. He studied medicine at Leeds and at St. Mary's Hospital, London, and had been a member of the British Medical Association continuously since 1889. When Dr. Summerskill qualified some 54 years ago, writes E. J. S., his first appointment in his native Yorkshire was one which had previously been filled by a coachman. He retained no reverence for those exciting days in medicine, although they provided him with a wealth of grim memories. The growth of medical science was most fascinating to him, and he was never known to miss reading the *B.M.J.* from cover to cover. Apart from a passion for travel and literature, he was completely absorbed in medical practice, in which he was extremely active until his heart began to fail last year. He refused to recognize the seriousness of his illness and saw patients almost until the end.

Medical Notes in Parliament

In moving the thanks of the House of Commons on May 18 to all ranks of the victorious Forces in Africa Mr. ATTLEE said he must mention the work of the medical service, of the doctors, the nurses, and all the non-combatant services. The motion was carried unanimously, as was a similar one moved in the House of Lords on the same day by Viscount CRANBORNE.

Food Supplies for Greeks

Mr. HARVEY asked on May 11 whether the Parliamentary Secretary to the Ministry of Economic Warfare could give information of the shipment of food supplies, especially of dried milk and vitamins for children, which were being sent to Greece; and whether the neutral authorities supervising their distribution continued to be satisfied that no abuse had occurred.

The Ministry's spokesman said that food supplies which had reached Greece during the last three months comprised 28,703 tons of wheat, 8,561 tons of pulse, and 1,096 tons of condensed milk. Further shipments which had left Canada but which had not yet arrived at Greek ports included approximately 32,000 tons of wheat, 6,000 tons of pulse, and 600 tons of condensed milk. It was not yet known whether these cargoes included vitamin tablets, though their inclusion had been agreed to. As regards the state of nutrition in Greece, recent reports had shown a considerable improvement as compared with a year ago, especially in Athens.

Sir FRANK SANDERSON asked on May 19 whether the Government would permit dried milk and vitamin concentrates to be sent to Greece, France, Belgium, and Poland to provide children under 16 and nursing and expectant mothers with a daily ration sufficient to ward off the worst deficiency diseases, seeing that the money, supplies, and shipping were available, and that the International Red Cross would be able to provide for full control of the distribution.

It was stated in reply that, after the fullest consideration and with the deepest sympathy for the Allied peoples of Europe, the Government were convinced that a general action of the kind described would inevitably be exploited by the enemy for his own advantage. Moreover, such action could hardly be confined to the countries named in the question, and the provision of foodstuffs for children and nursing and expectant mothers throughout occupied Europe would involve a very serious breach in the blockade.

Bread and Milk

Opening a discussion on May 13 about the work of the Ministry of Food, Mr. MABANE said the national milk scheme and the milk in schools scheme had increased the consumption of liquid milk far above the peacetime level. The claim of children and expectant mothers on milk came first. That was not their only priority. Whatever they needed for an adequate and full diet Lord Woolton was determined to supply. That attitude had the full support of Parliament. Stringency demanded that the nation should squeeze the last calorie and the ultimate vitamins out of the food it had.

Mr. DAVID ADAMS complained that there was no Government Department charged with seeing that the milk supply was pure. In London diseases which were milk-borne occurred despite the general pasteurization of milk there. That was due to mishandling of milk which had been properly pasteurized. Recently Prof. Ryle had visited Newcastle during his survey of hospitals for the Ministry of Health. He had said that in Cambridge his children had been affected by milk-borne diseases. The milk was said to be pasteurized but the apparatus was found to be antiquated and the milk was not really pasteurized. Newcastle-upon-Tyne Corporation found in 1942 that 24.1% of designated milk was unsatisfactory on bacteriological tests and 33.2% undesignated milk. In the North of England tuberculosis was on the increase among children.

Sir E. GRAHAM-LITTLE said that in most parts of the country 95% of the food of the larger part of the population consisted, by quantity, of bread. The loaf was of a heterogeneous composition and of no fixed standard. Of the germ which was extracted 99% was applied to proprietary articles. He appealed to the Ministry to raise the extraction percentage from wheat. Ten other diseases beside tuberculosis were constantly carried by milk. The next in frequency to tuberculosis was undulant fever. Last year 500 cases had been reported. These were a mere fraction of what occurred. This was an insidious complaint, seldom diagnosed. Something like ten milk-borne diseases were not revealed by the tuberculin test. Pasteurization was necessary to protect the public pending the production of milk which was free from a number of infections.

Mr. MABANE said the demand was not adequate to enable all T.T. milk to be sold as such. It was not the case that medical officers of health had been deprived of some right they previously had to reject milk. Consumers could purchase whatever type of milk which the supplier with whom they were registered provided, but if he did not provide T.T. milk they were not permitted to transfer their registrations to another dairyman in order to obtain T.T. milk. Efforts were being made to encourage and to assist dairymen to provide T.T. milk for customers who required it.

In an earlier debate Mr. Mabane had said that it was not in the national interest to publish the total gallons of milk consumed daily, but that from 60 to 65% was pasteurized. Milk supplied to schools did not all fall within one category, but must be approved as to source of supply and quality by the appropriate medical officer of health.

Protection of Practices Scheme

Mr. GROVES asked on May 13 how the Minister of Health proposed to reconcile the protection of practices scheme with the Medical Benefit Regulations and terms of service, having regard to the limitation of lists, the obligations upon deputies and partners, and the responsibility of the practitioner for the insured persons whose names were included in his list. Mr. ERNEST BROWN answered that under the National Health Insurance (Medical Benefit) Amendment Regulations, 1942, doctors who undertook to attend the insured patients of another doctor during the latter's absence on whole-time national service, under a voluntary protection of practices scheme, had the responsibilities of principals as well as deputies in respect of those patients. The provisions of the Medical Benefit Regulations and terms of service as to limitation of lists and deputies and partners accordingly applied, including provision for augmentation of the lists with the Minister's consent. In the case of statutory schemes a practitioner attending absentee practitioners' patients was in the position of a principal to whom the provisions of the Regulations and terms of service similarly applied.

Regulation 33B

Replying on May 13 to Dr. Summerskill, Mr. BROWN said information received from all but a very few authorities in England and Wales showed that 36 men and 475 women had

been reported to medical officers of health as alleged sources of venereal infection, of whom 1 man and 27 women had been the subject of more than one report, which was necessary before Regulation 33B could operate. Of these 28 persons two women had refused treatment, one expressly and one by default, and had been prosecuted and imprisoned. No civilian voluntarily undergoing treatment for venereal disease was subject to compulsion to complete it. He did not agree that the Regulation operated unfavourably against women.

Food Rationing Advisory Committee

Sir JOHN ANDERSON said on May 18 that the Food Rationing (Special Diets) Advisory Committee of the Medical Research Council had held fourteen full meetings in all. Owing to the decrease in the number of questions referred to the committee, and particularly of questions involving new principles, it had not so far been necessary to convene a full meeting in 1943, although a subcommittee met. Minor questions arising between meetings were circulated in the form of memoranda and the opinions of members obtained in writing. The other bodies consulted on behalf of the committee since the beginning of this year, in addition to Government Departments specially concerned, were the Royal College of Obstetricians and Gynaecologists, the Joint Tuberculosis Council, and the Tuberculosis Association.

Notes in Brief

Mr. Brown has recently taken the opportunity of asking local authorities to concentrate attention upon cleanliness in methods of production, treatment, and distribution of milk.

EPIDEMIOLOGICAL NOTES

Discussion of Table

In *England and Wales* during the week there were considerable fluctuations in the trends of infectious diseases. Rises occurred in the incidence of whooping-cough 585 and dysentery 58, but decreases were reported for measles 3,014, scarlet fever 225, acute pneumonia 161, cerebrospinal fever 25, and diphtheria 24.

Measles was down by 351 in Glamorganshire, 260 in Lancashire, 259 in Derbyshire, 215 in Essex, 210 in Kent, 177 in Suffolk, 165 in London, and 109 in Yorks West Riding. A few counties recorded a rise in incidence, the largest being Wiltshire 29, and Northumberland 28.

The downward trend of whooping-cough during the past month was interrupted by a sharp rise to the highest level of the past 20 months: though greatest in the North, it was general throughout the country. The largest increases were recorded in Lancashire 131, Yorks West Riding 67, Warwickshire 54, Derbyshire 27, London 27, Staffordshire 26.

The notification figure for scarlet fever touched the lowest level for 9 months. The biggest variations within the counties were decreases in Surrey 29, London 27, Staffordshire 26, Cheshire 24; and a rise in Essex of 20.

For the fifth consecutive week diphtheria has continued to decline slightly, and this disease is now at the lowest level since last August. The biggest reductions were in Yorks West Riding 32, Durham 26, Gloucestershire 20; whilst the largest increase was that of Lancashire 33.

A further large rise in dysentery, 58 cases, was reported, and the total is now three times that of a fortnight ago. Fresh outbreaks occurred in Lancashire, Blackburn C.B., 33 cases, and Essex, Chelmsford R.D., 22 cases; and in Staffordshire, Stoke-on-Trent C.B., where 45 cases were reported last week, there were 61 new cases.

In *Scotland* notifications of measles rose from 340 to 657, and of whooping-cough from 145 to 350. The city of Glasgow recorded a rise over the preceding week of 290 cases for measles and 169 for whooping-cough. In Edinburgh 84 cases of measles, a drop of 20, were notified.

In *Eire* diphtheria notifications fell considerably, and the total of 70 recorded was the smallest weekly total during the present year.

In *Northern Ireland* notifications of measles went up from 38 to 88: 71 were recorded in Belfast C.B. and 17 in Lisnaskea R.D., where a large outbreak of 207 cases was reported during the week ending April 10.

The Week Ending May 15

The notifications of infectious diseases during the week in England and Wales included: scarlet fever 1,748, whooping-cough 2,106, diphtheria 602, measles 8,032, acute pneumonia 712, cerebrospinal fever 62, dysentery 98, paratyphoid 4, typhoid 4.

No. 18

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended May 8.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for: (a) The 126 great towns in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1943					1942 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever	61	2	32	5	1	149	11	45	4	11
Deaths		—	3				—	1		
Diphtheria	643	35	154	70	20	713	28	197	45	28
Deaths	12	—	2	4	—	22	2	5	3	—
Dysentery	193	11	36		—	101	6	53		—
Deaths		—	—	—	—			—	—	—
Encephalitis lethargica, acute	2	—	—		—	3	—	—		—
Deaths		—					—			
Erysipelas		1	40	10	2		—	43	10	2
Deaths										
Infective enteritis or diarrhoea under 2 years				46					57	
Deaths	45	3	7	11	5	38	8	8	5	5
Measles	10,090	605	657	42	88	4,725	451	667	180	159
Deaths	7	4	1	—	1	10	—	4	—	2
Ophthalmia neonatorum	101	9	14	1	1	90	6	32	1	1
Deaths										
Paratyphoid fever	7	—	—		—	7	—	5		—
Deaths	1	—	—			—	—	—		
Pneumonia, influenzal*	745	9	12	4	2	1,096	44	14	8	12
Deaths (from influenza)	15	1	1	—	—	30	1	5	—	—
Pneumonia, primary			189	21				320	27	
Deaths		—		11	7		—		8	11
Polio-encephalitis, acute	1	—				1	—			
Deaths		—					—			
Poliomyelitis, acute	3	—	1	—	—	4	—	—	1	—
Deaths		—					—			
Puerperal fever	—	1	11	2	—	175	11	25	3	2
Deaths		—					—			
Puerperal pyrexia	138	11	14		1	—	—	26		1
Deaths										
Relapsing fever	—	—			—	—	—			—
Deaths										
Scarlet fever	1,458	137	226	32	37	1,145	73	184	40	37
Deaths	1	—	—	1	—	—	—	—	—	—
Small-pox	—	—	—		—	—	—	—		—
Deaths	—	—	—	—	—	—	—	—	—	—
Typhoid fever†	12	2	10	9	1	12	3	4	6	1
Deaths	—	—	—	—	—	1	—	—	—	—
Typhus fever	—	—	—	—	—	—	—	—	—	—
Deaths			—	—	—			—	—	—
Whooping-cough	2,225	142	350	31	28	1,641	176	58	59	15
Deaths	16	2	3	—	1	14	4	2	2	1
Deaths (0–1) year	341	46	64	29	22	387	387	88	32	31
Infant mortality rate (per 1,000 live births)								1		
Deaths (excluding still-births)	4,261	623	590	205	127	4,811	647	699	231	135
Annual death rate (per 1,000 persons living)			13·3	13·5	‡			15·7	15·4	‡
Live births	6,887	802	982	390	320	6,181	679	985	381	274
Annual rate per 1,000 persons living			20·0	25·6	‡			20·4	25·4	‡
Stillbirths	221	20	34			232	22	45		
Rate per 1,000 total births (including stillborn)			33					44		

* Includes primary form for England and Wales, London (administrative county), and Northern Ireland.

† Paratyphoid A and B now notified separately in Northern Ireland.

‡ Owing to evacuation schemes and other movements of population, birth and death rates for Northern Ireland are no longer available.

Medical News

The next meeting of the Biochemical Society will be held in the Department of Medical Chemistry, Edinburgh University, on Saturday, June 5, at 2.30 p.m. Tea at 4.30 p.m.

A one-day conference on casualty service has been arranged by the Citizens Guild for Civil Defence for Thursday, June 10, at Victory House, Leicester Square, W. The address of the Guild is 20, Buckingham Street, Strand, W.C.2, and tickets for the conference may be had from the secretary.

The next meeting of the Liverpool Medical Institution on June 3 at 4.30 p.m. will be devoted to surgery of the chest. Dr. Robert Coope and Mr. Morriston Davies will read papers upon the early recognition and diagnosis of and possibilities of intervention in diseases of the lungs, with special reference to bronchiectasis and carcinoma. Between 4 and 4.30 a number of specimens collected and presented by Dr. Joy Cronin Lowe and Mr. Ronald Edwards will be displayed. Tea at 4.15 p.m. At the conclusion of the meeting Mr. Hugh Reid will show a colour film illustrating an operation for lobectomy.

At a meeting of the Physical Society on Friday, June 4, at 5 p.m. in the Lecture Theatre of the Science Museum, Exhibition Road, S.W.7, Prof. F. C. Bartlett, F.R.S., will give the Thomas Young Oration on "Some Current Problems in Visual Functions and Visual Perception."

A sessional meeting of the Royal Sanitary Institute will be held in the National Museum of Wales, Park Place, Cardiff, on Saturday, June 5, at 10.30 a.m.

The Medical Research Council of Ireland (address: 85, Merrion Square, Dublin) has awarded grants to Dr. Stephanie Whelan, Dr. H. E. Counihan, Dr. S. J. Boland, Dr. N. Falkiner, Drs. F. Geoghegan and E. de Valera, Dr. P. L. Brennan, and Prof. W. J. E. Jessop; and seven earlier grants have been renewed for further periods.

Dr. T. A. Divine, Malayan Medical Service, has been officially reported prisoner at Singapore, and Dr. R. S. Hardie of Kuala Lumpur, F.M.S., prisoner of war in Thailand. Dr. O. E. Fisher of Fryston, Castleford, and of the Malayan Medical Service, is safe and in Japanese hands on Singapore Island.

Local authorities are required by the Ministry of Health (Circular 2818) to make a return of their public health and school medical staffs, to notify the Minister of vacancies, and to get his approval before they fill a vacancy and of the candidate proposed. It is pointed out that doctors engaged whole-time in public health and school medical work who are of military age are reserved in the posts they now hold, and if they wish to apply for other posts they must first obtain the Ministry's permission. Similar permission is necessary in the case of married women who, if they were not married, would be liable for military service. Written application for permission should be sent through the Regional Medical Officer of the civil defence area in which the doctor is working. Local authorities advertising vacancies in the *Journal* are asked to indicate that the appointment advertised has been approved by the Ministry.

A cancer centre is to be developed at the London Hospital, Whitechapel, from the deep therapy department.

Universities and Colleges

ROYAL COLLEGE OF SURGEONS OF EDINBURGH

At a meeting of the College held on May 18, with Mr. J. W. Struthers, President, in the chair, the following, having passed the requisite examinations, were admitted Fellows:

R. C. Baird, D. B. E. Foster, R. C. J. Hill, R. C. Howard, R. V. Liddell, A. R. Murray, G. N. MacFarlane, C. B. O'Carroll, T. E. Rutter, R. A. Smith, D. C. Wiseman.

The Henry Arthur Dalziel Ferns Bursary was, after a competitive examination in organic chemistry in its application to medicine, awarded to Thomas Dale.

The Bathgate Memorial Prize was, after a competitive examination in materia medica and therapeutics, awarded to A. M. Kinghorn.

Correction.—In our announcement of the conferring of the honorary degree of D.Sc. by the University of Oxford on Dr. Joseph Trueta, the Wingfield-Morris Orthopaedic Hospital at *Headington*, near Oxford, was wrongly described.

The Services

CASUALTIES IN THE MEDICAL SERVICES

Capt. WILLIAM RICHARD CYRLAS-WILLIAMS, who is reported as killed in action in North Africa, was the youngest son of Mr. and Mrs. W. Cyrlas-Williams of Porthcawl. He studied medicine at Cambridge and at University College Hospital and qualified M.R.C.S., L.R.C.P. in 1941, soon afterwards receiving a commission in the R.A.M.C. His widow is Dr. Ruth Cyrlas-Williams.

Reported Missing.—Capt. G. S. Hodge, R.A.M.C.

Missing, Singapore, now Officially Reported Prisoner of War, Thailand.—Capt. V. W. J. Hetreed, R.A.M.C.

Killed in Action in Tunisia.—Lieut. G. F. Barnes, R.A.M.C.

Missing, Presumed Killed.—Temp. Surg. Lieut. T. P. Storey, D.S.C., R.N.V.R.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, LONDON, W.C.1.

ORIGINAL ARTICLES AND LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated.

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B.M.A. SCOTTISH OFFICE: 7, Drumsheugh Gardens, Edinburgh.

ANY QUESTIONS?

Normal Temperature Range

Q.—*A patient continually records a temperature of 99.4° to 99.6° F. taken in the late afternoon or early evening (4.30 p.m. to 5 p.m.). Can this be looked upon as being a normal temperature for this patient? Below what level is a temperature considered as being pathologically subnormal?*

A.—The limits of the daily rhythm of body temperature were set by Gessler in 1928 at 36.5° to 37.5° C., which is equivalent to 97.7° to 99.5° F., and since then these values have been pretty well established. These values were obtained with a deep rectal thermometer, and they are approximately one degree higher than those obtained by placing a thermometer in the mouth. The lowest temperature is found between 2 and 4 a.m., and the highest in the early afternoon. The latter persists from about 1 to 7 p.m. and is usually found again at 11 p.m. Two groups of people appear to be exceptions to this rule: first, newborn babies, who have a much smaller diurnal range; and, secondly, the very aged, whose mean value is lower and in whom the daily rhythm may be reversed. The variations appear to depend more on the absolute time than the occupation, and are obtained even when more sleep is taken by day than by night. Strenuous exercise causes a temporary rise in body temperature of from 1° to 4° F. If the temperature of the patient in question was taken by mouth, it must be regarded as abnormal and must be attributed to some degree of toxaemia, even though this may not easily be detected by other means.

Signs of Spinal-cord Constriction

Q.—*If a constriction, such as an organizing blood clot, were applied to the spinal cord, which cells or tracts would be likely to be affected first?*

A.—This is a most important question. Clinical misdiagnoses in cases of compression of the spinal cord may occur in the early stages, just when operation is most required and radical cure most possible. Many medical men assume that a sharp "sensory level" is always an early and constant sign of spinal-cord compression and do not think of this diagnosis unless they find such a level. Sensory loss below the level of compression is a constant sign only at a

comparatively advanced stage; as a result, successful removal of the cause of compression gives only too often a disappointingly small amount of relief. When the cord is subjected to a generalized pressure all round its circumference, at one level, and this pressure slowly increases, then the tracts which are nearly always first affected are the pyramidal, with the insidious appearance and progression of spastic paraplegia. There may for a long time be no sensory changes, so that a misdiagnosis of some progressive system disease such as disseminated sclerosis, amyotrophic lateral sclerosis, or subacute combined degeneration, may be made. As the pressure increases the afferent tracts, the posterior columns, usually succumb next. They commonly do so in a characteristically peculiar way that may deceive the clinician—namely, in an ascending manner, so that the lowest part of the body is first affected. This may lead to some form of ascending infection being thought of, such as polyneuritis or ascending myelitis.

The moral is that whenever a case of spastic paraplegia without sensory changes and of insidious onset and with a tendency to progression is seen, of which the cause is not obvious, then cord compression from some such cause as tumour or granulomatous infection should at once be thought of. Fortunately, a rise in cerebrospinal-fluid protein often confirms the diagnosis, but it may be necessary to perform myelography by cisternal injection of lipiodol to determine the level of compression as well as to confirm the diagnosis, and no hesitation should be felt about carrying this out.

It should be remembered that in some cases of compression sensory roots may be involved at the level of the lesion, giving rise to root-pains of a segmental distribution at this level. These pains can be very deceptive, and, as they are a very early sign, they should not be overlooked. Many a case has been diagnosed in the past as fibrositis, neuritis, or even neurosis, and valuable time has been lost. Also there is no more deceptive syndrome in medicine than compression of the cauda equina in its early stages. The bladder is frequently paralysed early, and retention of urine may be the first symptom. A misdiagnosis of hysteria has sometimes been made in these cases. A first sign may also be uni- or bi-lateral sciatica as a form of sciatic root irritation.

Diet for Catarrhal Jaundice

Q.—*A child aged 9 years has catarrhal jaundice. I am at my wits' end to know what to advise the parents to give the child to eat. As you no doubt are aware, fish, chicken, and eggs are almost unobtainable. Can you suggest a suitable wartime diet for such cases?*

A.—The essential feature of the diet in catarrhal jaundice is reduction of the fat intake. For this reason eggs are undesirable. The modern tendency is to give a diet high in protein as well as in carbohydrate, and casein is regarded as particularly valuable. There is a suggestion that vegetable protein is better tolerated than animal protein, but it is doubtful if the prejudice against butcher's meat has any real foundation. Skim milk and "household milk" should be given generously in the form of potato and vegetable soups, or with cereals, arrowroot, and other farinaceous foods. Fruit and fruit drinks should also be used as freely as they are available. Glucose may not be well tolerated during the stage of nausea, and savoury flavours like "marmite" may be appreciated better. As soon as appetite recovers, it should be satisfied with bread and toast, jam, honey, and marmalade, lean meat, vegetables, salads, puddings made with skim milk, etc. Fat should be restricted for approximately six weeks, and it is wise to give liq. vitamin. A & D Conc. *B.P.* m 3–5 b.d., and water-soluble vitamin K (acetomenaphthone) 2–5 mg. daily by mouth during this period to make up for the deficit of fat-soluble vitamins in the diet.

Food Priority for Pregnant Women

Q.—*There is a discrepancy between the practices of the borough and county food offices here with regard to the food priority certificates for pregnant women, and I wonder if you can tell me which is in accordance with the regulations. One insists on a fresh medical certificate every three months, and the other grants the expectant mother renewals every three months without any further certificates from the doctor. The officials at the former office say quite definitely that the regulations do not allow them to renew the expectant mother's priority milk permits, etc., without a new doctor's certificate.*

A.—The maximum period of validity of the first medical certificate to a pregnant woman entitling her to priority supplies of food is three months. Authority for the supply of these foods may be renewed for an additional period of three months until approximately one month after confinement on the production of a further medical certificate. A fresh medical certificate is therefore necessary every three months.

Chromosomes in Nerve Cells

Q.—*All textbooks I have consulted make the general observation that chromosomes are present in every somatic cell. Can it be definitely stated, however, that these bodies exist in the cells of the human brain and nervous system? It may be that, as with the nuclei of red blood corpuscles in man, they are present in earlier, but not in later, phases of development of the nervous system. If this is so, at what stage in the ontogenetical evolution of neurons do the chromosomes disappear?*

A.—Chromosomes can seldom be made visible except during nuclear division. Nerve cells do not divide later than the germinal stage; mitosis is never seen in neurones. Once the stage at which division can occur has passed, therefore, it is not possible, in the present state of knowledge, to discover whether the chromosomes of the nerve cell nucleus still exist as such or whether a process of regression takes place. As is pointed out in the question, this is not unusual once a cell has passed the reproductive stage and become specialized to perform a particular function.

LETTERS, NOTES, ETC.

Changing the *p*H

Dr. B. H. SHAW (St. Mawes) writes: Dr. Richard Kerry in his letter on changing the *p*H (April 24, p. 521) suggests that shock may be due to excess of potassium in the blood. Is it not more probable that the excess of potassium in the blood may be the result of shock? A. V. Hill states ("Chemical Transmission in Nerve," Liverside Lecture, 1932) that "when a nerve is stimulated to fatigue, K escapes during and for some time after stimulation," and suggests that the surface is rendered permeable during activity; Horton (1930) found that in an excess of potassium, muscle was much less irritable. Clinically, I have found very considerable benefit resulting from the use of potassium chlorate (5-gr. tablets dissolved in the mouth, night and morning) in states of anxiety and early schizophrenia, also in relation to the sedative effect of K on muscle irritability, good results following similar administration in bladder troubles so frequent in old people with prostatic enlargement.

Thirst at Sea

Surgeon Rear-Admiral V. G. THORPE writes: Apropos of our correspondence two years ago, and your note on "Thirst at Sea" in the *British Medical Journal*, July 26, 1941, I have the honour to draw your attention to an article in the May number of the *Reader's Digest* entitled "Survive at Sea by Eating and Drinking Fish." The writer (American) states that the raw flesh of a freshly caught fish contains a large quantity of a watery fluid which can be squeezed out of it by pressure or by wrapping it in a clean napkin and twisting the ends. It is a pink liquid, and tastes sweet, with only the slightest suggestion of fish about it. Two seamen volunteered to drink no water for ten days and live for that time on ordinary "abandon ship" rations and fish juices. They came through the test in perfect health. Alternatively the raw flesh can be chewed, and the solid matter rejected, which is the method the natives of Tahiti adopt. Apparently the United States Navy is taking up the idea, and is ordering life-boats and rafts to be fitted up with fishing tackle, nets, etc., so that no one in future need die of thirst so long as they have the means to catch fish.

Inaccurate Report in Newspaper

Prof. H. J. SEDDON (Clinical Director, Wingfield-Morris Hospital, Oxford) writes: On two occasions within the last six months the work of the Oxford Peripheral Nerve Injury Centre has been the subject of inaccurate articles that appeared in the lay press. On the first occasion the information was obtained through a hospital servant. On the second (May 13) we have not yet been able to trace how or when the reporter gained access to the hospital. The effect of these articles, published without the knowledge, consent, or approval of the hospital authorities, has been singularly unfortunate. People with all sorts of irremediable nervous disorders are writing asking for consultation or treatment.

Tanning for a Skin Lesion

Dr. L. WERTHEIM (Ashton-under-Lyne) writes: With reference to the letter on tanning for a skin lesion, by Dr. K. A. McCaughey (April 24, p. 519), it might be of interest to recall that the astringent effect of tannic acid on vesicular and "weeping" lesions of eczema (and dermatitis) has been known to dermatologists many years before the drug came into general use for burns. The late Prof. S. Ehrmann of Vienna, to whose school I had the privilege to belong, always recommended tannic acid as an excellent desiccant for certain types of eczema. He applied it in a 2% aqueous solution, occasionally also in a lotion or ointment. When in recent years preparations such as tannin jelly, etc., were introduced for the treatment of burns, I had no hesitation in taking advantage of their most convenient properties and in using them for the treatment of weeping eczema. The results were highly satisfactory in both infants and adults, especially in cases of weeping peri-anal eczema in babies.